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The Commonwealth of Massachusetts

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ANNUAL REPORT

OF THE

DEPARTMENT OF LABOR  
AND INDUSTRIES

FOR THE

YEAR ENDING NOVEMBER 30, 1928





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## DEPARTMENT OF LABOR AND INDUSTRIES

## OFFICIALS.

E. LEROY SWEETSER, EVERETT, COMMISSIONER.  
 ETHEL M. JOHNSON, BOSTON, *Assistant Commissioner*.  
 EDWARD FISHER, LOWELL, *Associate Commissioner*.  
 HERBERT P. WASGATT, WABAN, *Associate Commissioner*.  
 SAMUEL ROSS, NEW BEDFORD, *Associate Commissioner*.

## HEADS OF DIVISIONS AND BRANCHES.

**Board of Conciliation and Arbitration.**

EDWARD FISHER. HERBERT P. WASGATT. SAMUEL ROSS.

**Division of Minimum Wage.** ETHEL M. JOHNSON, *Acting Director*.

EDWARD FISHER. HERBERT P. WASGATT. SAMUEL ROSS.

**Division of Statistics.** ROSWELL F. PHELPS, *Director*.

MARGARET SHEA, *Statistician for Manufactures*.

LESTER E. ARCHIBALD, *Statistician for Labor*.

**Division of Industrial Safety.** JOHN P. MEADE, *Director*.

JOSEPH MONETTE, *Counsel*.

**Division of Standards.** FRANCIS MEREDITH, *Director of Standards*.

## PUBLIC EMPLOYMENT OFFICES.

**Boston.** EVERETT L. HANNA, *Superintendent*.

**Springfield.** CHESTER A. ALLEN, *Superintendent*.

**Worcester.** WILLIAM A. WILDER, *Superintendent*.

**Federal Director of Employment Service.**

E. LEROY SWEETSER, *Commissioner*.

## REPORT OF THE COMMISSIONER OF LABOR AND INDUSTRIES

### *To the General Court.*

The annual report of the commissioner of labor and industries for the year ending November 30, 1928, is herewith submitted.

It contains reports of the heads of the several divisions into which the department is organized, and through which the work of the department is conducted. The divisions of the department are as follows: The division of industrial safety; the board of conciliation and arbitration; the division of minimum wage; the division of statistics, and the division of standards.

Two petitions were received during the year; one from the felt hat industry, and one from the fish canning industry—under section 56 of chapter 149 of the General Laws—requesting the department to determine their industries to be seasonal occupations. After a public hearing, and an investigation, the department refused the petition in the case of the felt hat industry. The second petition—the fish canning industry—was granted and the department determined the canning of fresh mackerel to be a seasonal occupation.

The commissioner received 94 applications requesting authority under chapter 236 of the acts of 1923 to permit laborers, workmen and mechanics to work more than eight hours in any one day on contracts entered into by the board of public works for the construction of highways. After an investigation, 91 of these requests were granted and three, refused. This does not mean that the employees were permitted to work more than 48 hours in any one week but when a day was lost through rain or other causes the time could be made up during that week.

A regular and systematic inspection is made of every factory, workshop, manufacturing, mechanical and mercantile establishment in the commonwealth. In this connection there were 44,385 establishments inspected, in which 904,694 men, women and minors were employed. In cases where it was necessary to check up compliance with orders, and in dangerous occupations, frequent inspections were made. There was a total of 69,633 inspections and reinspections, which resulted in the issuance of 18,915 orders to compel compliance with the laws, and rules of the department, to correct conditions affecting the health and safety of employees.

The department received 680 complaints of alleged violations of the labor laws from outside sources during the year, which number does not include complaints concerning non-payment of wages. Complaints as to non-payment of wages numbered 2,065 and the amount paid to employees as a result of the work of the department was \$43,711.61, an increase of \$7,919.05 over the previous year. These claims are mostly for small amounts due employees, who cannot afford to lose the wages due or to take civil action to collect them.

The protection of the health and safety of the workers in industry is the most important function of the department. All injuries received, arising out of and in the course of employment, including occupational diseases, are required by law to be reported, and the information thus received is of great value to the department in its prevention work. Machinery accidents can be controlled by the use of safety devices and these accidents are being greatly reduced. Non-machinery accidents are more difficult to control. It requires coöperation between the employer, the employee and the department. In carrying out this work the department has been fortunate in having the assistance of the Massachusetts safety council, of which the commissioner is a director. The Worcester and Springfield safety councils have also coöperated with the department in its safety work.

The total number of accidents, including occupational diseases, reported for the year ending June 30, 1928, was 158,990, which is over 9,000 less

than the number reported the previous year. Of this number 60,330 were tabulatable injuries. That is, causing loss of time exceeding in duration the remainder of the day or shift on which the accident occurred. This is about 4,000 less than the total in the year 1927. There were 340 fatal injuries, an increase of 23 over the previous year.

Attention is called to the work of our inspectors of building operations. The completion of some of our largest buildings in Boston during the past year without a loss of life shows what can be accomplished where the employer and employee work together with the department. To illustrate: The building of the North Station with its great amusement auditorium, finished in fifteen months without a fatality, and no one seriously injured. Over 1400 men were employed at one time, while 70,000 people passed in and out of the terminal every day. This experience demonstrates that large building enterprises may be successfully carried on without sacrifice of human life.

The increased use of chemicals in industrial processes has extended the danger of injury from poisonous substances and gases. The inspection force has been alert to report the same and orders are promptly issued to safeguard the health of the workers in these dangerous places.

In addition to our two permanent industrial physicians the department has had the services of Dr. Derric C. Parmenter, formerly head of the industrial clinic at the Massachusetts General Hospital, and now an instructor in the department of industrial medicine at the Harvard school of public health. In this connection, Dr. George H. Bigelow, commissioner of public health, and Dr. Francis D. Donoghue, medical adviser to the department of industrial accidents, have also coöperated with the department.

The four public employment offices maintained by the commonwealth are administered by this department. Two of these offices are located in Boston, one in Springfield and one in Worcester. Although the labor market conditions in the districts served by these offices were not altogether satisfactory during the past year, the records of the several offices for 1928 compare quite favorably with the records for 1927. The total number of positions reported filled by the four offices in 1928 was 28,324, of which number 19,158 were filled by males and 9,166 were filled by females.

At the state public employment offices special attention is given to the placement of veterans. The total number of veterans referred to positions by the four offices during the year 1928 was 4,210. The number of positions filled by veterans was 3,183, which constituted 16.6 per cent of the total number of positions (19,158) filled by all male applicants for employment at these offices.

The census of manufactures in Massachusetts for the year, 1927, was taken during the past year, in coöperation with the United States bureau of the census. The results show that the total number of establishments in operation in 1927 was 10,091. The total value of products manufactured in these establishments during the year amounted to \$3,306,339,607, the value of stock and materials used in manufacture was \$1,678,381,053, and the difference between these amounts (\$1,627,958,554) represents the *value added* by the various manufacturing processes. The average number of wage-earners employed in the 10,091 establishments during the year was 577,513, and the total amount paid in wages was \$705,054,827. In order that the results of the census might be made available as soon as possible, principal data for the cities and towns were made public in the form of press notices which were issued immediately upon the completion of the tabulations. The annual census of manufactures in Massachusetts for the year 1928 will be taken during the year 1929 by this department, independently of the federal census bureau, which takes a country-wide census of manufactures biennially.

In 1922, the department began the collection of monthly payroll data in order to show, currently, the trend of employment and earnings of wage-



earners in manufacturing industries. From year to year the scope of its inquiries have been extended, but there are several important groups of industries which are not yet covered by the monthly surveys. The recent announcement that the "stabilization of employment" will be a major policy of Mr. Hoover's administration has resulted in greatly increasing the demand for pay-roll data of a thoroughly representative character and of recent date. The department has endeavored to answer as fully as possible all inquiries bearing on this important problem of industry. If the scope of its inquiries in this field of investigation is to be extended, as appears to be desirable, an increase in the appropriations for the statistical work will be necessary.

During the year 1928, the number of strikes which occurred in Massachusetts was 55, in which the number of employees directly or indirectly affected was about 47,000, as compared with 63 strikes affecting about 9,000 employees in 1927. While the number of actual strikes was less during the past year than that of the year before, the strike of the textile workers in the city of New Bedford, which lasted 26 weeks, involving about 26,000 employees, was one of the biggest and longest labor controversies which has occurred in this commonwealth for sometime. The board of conciliation and arbitration was in close touch with both sides and accomplished much in the settlement of this strike. In addition, the board heard and rendered decisions in 118 cases which were submitted to it by both sides for arbitration.

An interesting feature has been tried out in the division of standards, suggested by one of the inspectors, who noticed that in some of our cities pupils of the high school were permitted to fill the offices of the city for one day, and that no one was assigned to act as a sealer of weights and measures. At the state convention he suggested that a prize of \$25 be given to the high school pupil of the city in which the convention was held who would write the best essay on "The Value of the Sealer of Weights and Measures to his Community". The result was very successful and has done much towards educating and interesting the public in helping the department.

In view of the fact that the work of the department has steadily increased both in volume and importance since December, 1919, and the salaries of the present associate and assistant commissioners have remained the same, I herewith recommend that consideration be given this matter. To accomplish this so far as it relates to one of the associate commissioners, who is the chairman of the board of conciliation and arbitration, it is necessary to make a change in the present law and recommendation for this purpose is hereby submitted.

#### *Retirement of G. Harry Dunderdale*

Mr. G. Harry Dunderdale, superintendent of the state public employment office in Boston, reached the age of retirement on July 12, 1928, and on that day was retired from the service of the commonwealth. His connection with the employment service began with his appointment as assistant superintendent of the state public employment office on November 19, 1906, established at that time, and he was appointed superintendent of the Boston office May 1, 1915.

Mr. Dunderdale was a zealous public servant; enthusiastic in his work; kindly and sympathetic in his relations with the applicants for employment. He was beloved by all who were associated with him, and had the respect of all who knew him in this department.

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*Appropriation.* The total amount of the several appropriations for the use of the department during the year ending November 30, 1928, was \$370,930. The expenditures amounted to \$351,692.01, leaving an unexpended balance of \$19,237.99, in addition to which there was reserved for outstanding bills an amount estimated at \$4,330. There has been collected

in fees and paid into the treasury of the commonwealth through the division of standards the sum of \$90,492.05. If this amount were deducted from the total expenditures the net cost of the department to the commonwealth would be \$261,199.96.

E. LEROY SWEETSER,

*Commissioner of Labor and Industries.*

## FINANCIAL STATEMENT FOR 1928 GENERAL

<i>Account</i>	<i>Appropriation</i>	<i>Expenditures</i>	<i>Unexpended Balance</i>
Officials . . . . .	\$20,500 00	\$20,500 00	—
Personal services . . . . .	275,330 00	266,733 37	\$8,596 63
Contingent and travel . . . . .	72,600 00	62,991 97	9,608 03
Wage Boards . . . . .	2,500 00	1,466 67	1,033 33
<b>Totals</b>	<b>\$370,930 00</b>	<b>\$351,692 01</b>	<b>\$19,237 99</b>
Collected in fees and paid into the treasury of the Commonwealth . . . . .			\$90,492 05
Collected in fees and paid into the treasuries of cities, towns and counties of the Commonwealth . . . . .			35,848 00

### BY DIVISIONS

	<i>1928 Appropriation</i>	<i>Expenditures</i>	<i>Unexpended Balance</i>
<i>Administration</i>			
Commissioner, assistant commissioner, associate commissioners (personal services) . . . . .	\$20,500 00	\$20,500 00	—
Clerical and other assistance to administration . . . . .	4,470 00	4,398 87	\$71 13
<i>Division of Industrial Safety</i>			
Personal services . . . . .	122,000 00	120,012 31	1,987 69
Expenses . . . . .	30,000 00	28,979 52	1,020 48
<i>Board of Conciliation and Arbitration</i>			
Personal services . . . . .	16,000 00	12,530 00	3,470 00
Expenses . . . . .	4,000 00	2,879 63	1,120 37
<i>Division of Minimum Wage</i>			
Personal services . . . . .	12,000 00	10,939 77	1,060 23
Expenses . . . . .	3,300 00	2,562 08 <sup>1</sup>	737 92
<i>Wage Boards</i>			
Personal services and expenses . . . . .	2,500 00	1,466 67	1,033 33
<i>Division of Standards</i>			
Personal services . . . . .	29,160 00	28,687 42	472 58
Expenses . . . . .	9,800 00	6,953 09 <sup>2</sup>	2,846 91
<i>Division of Statistics</i>			
Personal services . . . . .	39,500 00	38,938 26	561 74
Expenses . . . . .	11,000 00	7,375 86 <sup>3</sup>	3,624 14
<i>Public Employment Offices</i>			
Personal services . . . . .	52,200 00	51,226 74	973 26
Expenses . . . . .	14,500 00	14,241 79 <sup>4</sup>	258 21
	<b>\$370,930 00</b>	<b>\$351,692 01</b>	<b>\$19,237 99</b>

<sup>1</sup> Not including outstanding bills estimated at \$155.

<sup>2</sup> " " " " " " \$750.

<sup>3</sup> " " " " " " \$3,225.

<sup>4</sup> " " " " " " \$200.



# REPORT OF THE DIVISION OF INDUSTRIAL SAFETY

JOHN P. MEADE, *Director*

## INSPECTION WORK

Regular inspection of industrial establishments is the basis for enforcement of the labor laws. The division of industrial safety is authorized to do this work. Its duties include supervising the safety, health and conditions of employment of wage-earners in manufacturing, mechanical, mercantile and other industrial establishments. Among these functions are: Securing compliance with the laws and regulations for the safeguarding of hazardous machinery and the protection of employees against processes in industry dangerous to health; providing local and general exhaust ventilation where irritant dusts and fumes prevail; and enforcing the statutes requiring compliance with sanitation. These include the enforcement of rules and regulations for suitable toilet and washing facilities; maintaining proper temperature in weaving and spinning departments of textile mills; adequate lighting in places of employment; providing pure drinking water for employees; enforcing the statutes restricting the employment of women and children, and other laws for their protection.

The inspection of building operations for the purpose of maintaining safe scaffolding and work platforms for employees in this dangerous trade and enforcing the laws with regard to employment in the construction of public works are among its other duties.

Complaints of violations of labor laws are investigated and study made of accidents and diseases of occupation to determine means for the prevention of similar occurrences to other employees. Reference in detail is made to these matters herein. Reports are made regularly to the commissioner, dealing with special problems in industry affecting the well-being of employees and requiring his attention and direction.

There was a total of 52,252 inspections and 17,381 reinspections made during the year.

## SUMMARY OF ACTIVITIES

	All Estab- lishments	Manufacturing Mechanical	Mercantile
Number inspected	44,385	19,931	24,454
Number of employees:			
<i>Males</i>			
14 to 16 years	6,540	4,591	1,949
16 to 21 years	49,597	40,493	9,104
Illiterate	1,391	1,369	22
Over 21 years of age	540,460	458,053	82,407
	<hr/> 597,988	<hr/> 504,506	<hr/> 93,482
<i>Females</i>			
14 to 16 years	5,696	5,410	286
16 to 21 years	62,843	52,938	9,905
Illiterate	1,428	1,425	3
Over 21 years of age	236,739	192,634	44,105
	<hr/> 306,706	<hr/> 252,407	<hr/> 54,299

The number of orders outstanding December 1, 1927 was 1,386, and the number of written orders was 10,742, making a total of 12,128. The number of written orders complied with was 11,319. There were 30 cancelled orders, while those outstanding on November 30, 1928 totaled 809.

### *Summary of Inspections*

The following statement indicates the activities of the inspection force for the year ending November 30, 1928:

*Inspections:* Mercantile, 24,454; mechanical, 19,931; building operations, 7,867; total, 52,252.

*Reinspections:* 17,381.

### *Visits*

Complaints, 2,917; accidents, 2,051; diseases of occupation, 425; homework in tenement houses, 177; total, 5,570. Homework licenses issued, 114; painters' certificates of registration issued, 396.

### *Orders Issued*

*Labor:* Employment of women and minors, 328; posting time notices, 4,118; minors in prohibited trades, 51; procuring and returning certificates, 4,054; public works, 11; total, 8,562.

*Health:* Sunday work, one day's rest in seven, 140; ventilation, humidity, dust removal, drinking water, core rooms, 288; lighting, injury to eyes, toilet and washing facilities, medical chest, 3,389; meal hours, seats, lockers, 86; total, 3,903.

*Safety:* Communication with engine room, 11; safeguarding machinery, 2,206; miscellaneous, 203; total, 2,420.

*Building operations:* Painting orders, 793; building orders, 3,220; total, 4,013.

*Miscellaneous:* 17.

*Totals:* Orders issued, 18,915. Orders complied with, 19,492, including 8,173 verbal orders which were complied with at the time of issuance.

### *Complaints*

Employed under 14 years of age, 14; employed without certificates, 13; employed in prohibited trades and on dangerous machinery, 2; illegal public exhibition of children, 13; health and sanitation (impure drinking water, failure to provide lockers, inadequate or no blower system), 86; time notices not posted, 2; at time other than stated, 2; overtime employment of women and minors, 417; public works, 20; non-payment of wages, 2,065; illegal advertising, 15; unguarded machinery, 4; building operations, 41; miscellaneous (fines, holiday employment, weavers' specifications), 51; total complaints, 2,745.

### INDUSTRIAL SAFETY

The introduction of new machinery and frequent changes in the processes of industry unite in presenting one of the leading problems affecting the welfare of employees. It concerns the health of men, women and children employed in the work places of the state. Constant vigilance is necessary to prevent exposure to occupational dangers in the operation of machinery. Efficient inspection work is the means by which this is accomplished. During the year 2,206 orders issued by the department of labor and industries with respect to safeguarding machinery were complied with by employers. These included providing devices to remove hazards on power transmission equipment, sprockets, inrunning gears and set screws on revolving parts. Others required the installation of emergency control devices on each floor or the use of friction clutches, tight or loose pulleys and motor stops. Orders to comply with rules in this connection were promptly concurred in and this was true of others relating to belts and pulleys dangerously adjacent to passageways or working po-

sitions of operators; to those located over commonly used passageways or aisleways; to vertical or horizontal transmission shafting; clutches having projections; revolving parts exposed to contact; couplings and collars of a dangerous type; balance and flywheels without protection and projecting keys in shafting.

Special work of this kind was done on laundry machinery in connection with interlocking devices on extractors; in the safeguarding of calender rolls in paper mills; on embossing machinery in the leather-finishing trade and on stone-crushing machinery in connection with road building plants; in the safe control of motor-driven dough-mixing machinery and meat-grinding devices in mercantile establishments. Careful attention was given to providing safety flanges and hoods for metal-grinding machinery; proper safeguarding of saws, jointers and planers in wood-working establishments; stamping and punch press machinery and shears for cutting steel in the metal trades.

In foundries, this work was extended to safeguarding overhead electric cranes with proper chains, cables and cage, also standard system of signaling, and requiring protective devices and clothing for employees. Furnishing goggles and shields for men in plants where metal and mineral particles are struck off on abrasive wheels; the use of rubber gloves and rubber aprons, and protection of eyes in the handling of acids, include some of the details in the work of the division to protect employees from injuries in the course of their employment.

This work required inspection in textile mills, including woolen and cotton goods; shoe factories; tanneries; clothing factories; printing and publishing establishments; foundries; wood-working establishments, including furniture, pianos, chairs and other establishments engaged in the manufacture of similar products; dyeing and finishing textiles; foundry and machine shops; paper and wood pulp establishments; slaughter and meat-packing; in the manufacture of electrical machinery apparatus and supplies; motor vehicles, including bodies and parts; confectionery; textile machinery; cutlery and edge tools; silk manufacturing and electric light establishments; in jewelry; soap manufacturing; and other industries, including all branches of the building trades.

Much progress was made in the work of safeguarding machinery at the point of operation. From this source arises largely permanent partial disability injuries. It constitutes one of the most difficult problems in dealing with employee exposure, and concerns the protection of eyesight and of hands and fingers against operating dangers.

Regular inspection of power punch press and drop forge machinery was carried on and assistance given in the use of devices for keeping hands of the operator out of the danger zones. Promoting the installation of improved devices to safeguard the point of operation was an active feature of the inspection work. Co-operation was given by many concerns in providing safeguards of an improved type on hazardous machinery. The gradual reduction in the number of machinery accidents in this state proves this to be constructive work. This is clearly indicated in the following table dealing with this subject:

#### *Machinery Accidents*

	1919	1927
Injuries at point of operation	14,764	5,651
Accidents caused by belts	711	191
On gears	702	298
Set screws, keys and bolts	49	15
Counterweights	48	3
Crank or eccentrics	23	43
Flywheels	20	11
All others	2,173	2,354
	<hr/> 18,490	<hr/> 8,566



That the severity degree of injury has been reduced in accidents on machinery is well-established. In 1919, out of a total of 67,240 tabulatable injuries, 1,750, or 2.6%, resulted in permanent partial disability; in 1927, there were 64,167 tabulatable injuries and 1,232, or 1.9%, caused permanent partial disability. These included amputation or loss of use of phalanges, fingers, thumbs, hands, toes, feet, limbs and the loss of sight of eyes.

Analysis of causes producing machinery accidents points clearly to the efficiency of factory inspection work in the safeguarding of machinery. This is indicated in the substantial reduction which has taken place in accidents due to flying objects and operating of machines. Accidents, including these for a period of years, are compared herewith, showing the manner in which the injury occurred and describing the fundamental cause:

*Machinery Accidents by Manner of Occurrence*

	1919	1927
Starting, stopping or operating machine	9,675	4,180
Flying objects striking operator	3,285	731
Cleaning or oiling machine	1,298	569
Adjusting machine, tool or work	1,758	666
Breaking of machine, tool or work	620	182
Repairing machine	223	69
All other	1,631	2,169
	<hr/>	<hr/>
Totals	18,490	8,566

In 1919, of 9,675 accidents in the starting, stopping and operation of machinery, 8,987 occurred at the point of operation; in 1927, of 8,566 machinery accidents, 4,180 were of this type. Cleaning or oiling machinery caused 1,360 cases in 1918 and 569 in 1927. This reduction was largely due to safeguarding inrunning gears and other danger parts. Improvement in machine construction is agreed to be an important reason in bringing down the number of injuries to operators due to flying objects or breaking of machinery parts from 3,285 in 1919, or 17.8% of all machinery accidents, to 731, or 8.5% of similar accidents in the year 1927.

Reduction of time lost by employees through machinery accidents has taken place. From July 1, 1919 to June 30, 1920, contact with machinery was responsible for 29.1% of all resultant days lost because of injuries to employees in the industrial establishments of this state. Gradual decrease in the percentage of such accidents came with each succeeding year until it fell to 22.5% in the twelve months ending June 30, 1927.

Another favorable result of inspection work in the safeguarding of machinery is found in the reduction which has taken place in permanent partial disability injuries. Contact with machinery was responsible for 74% of these in the year ending June 30, 1920, while these figures fell to 66.5% in the year ending June 30, 1927. For the year ending June 30, 1920, there were 1,611 cases of permanent partial disability, or 2.4% of all tabulatable injuries for that year. These constituted 74% of all accidents due to contact with machinery and included amputation or loss of fingers, thumbs, toes, feet or limbs and the sight of eyes. In the twelve months ending June 30, 1927, the total number of permanent partial disability injuries dropped to 1,232, or 1.9% of all the tabulatable accidents. Constant effort was made during the year by this division to fix attention upon the need of further reducing tabulatable injuries. These results have followed systematic work done in safeguarding dangerous machinery exposures. It included careful attention to power control and the condition of shafting, belts and pulleys; the guarding of shaft ends projecting beyond the edge of the hanger; shields to prevent the flying of breaking belts and guards for crank and cross head on steam engine.

*Building Operations*

During the year, effective work was done in the enforcement of revised rules and regulations pertaining to the painting business. In some instances sub-contractors of limited means and experience failed to provide safe work places for their employees. Incidents of this kind were given careful attention, and orders were issued verbally to these employers and usually prompt compliance followed. It was necessary to prosecute in a few cases. Stagings used in the painting of buildings were given frequent inspection. Devices required by the rules to protect workmen against injury were examined regularly. These included the tie-lines secured to a stable part of the building or structure when the staging is attached to or supported by the gutters; life lines and belts to men employed 50 feet or more above the ground; the use of ledgers, diagonal stays, horizontal stays, planks and guard rails on interior scaffolding; requiring the proper spacing of falls and preventing overcrowding of stagings; use of proper ladders, planks, trestles, brackets, locks and ropes; the construction of suitable platforms for working on sides of structures and the use of trestle supports under limitations fixed by the rules.

Health regulations for the protection of men employed on spray painting machinery and the use of respirators and facilities for anointing the exposed parts of the body with non-drying oil or cream were enforced in carrying on these operations. Contracting firms engaged in this business co-operated readily with orders issued by the department for this purpose. During the year, 368 contractors in the painting business were registered.

In safeguarding work places on buildings under construction, 3,406 orders were complied with, many of these being issued verbally by the inspector on the premises. Nearly all of these were in connection with staging, scaffolding and other equipment used in the erection of buildings and other structures. Working platforms with toe-boards and guard rails were required and safety devices in connection with the use of electricity with dangerous voltage inside of the building. Protection to employees working below stagings and around floor openings; regulations to control smoke and fumes where artificial light was used; piping of salamanders to exhaust smoke and gaseous material to the outside air were other requirements complied with to provide safety for mechanics in the building trades.

In very large buildings constructed during the year, systematic inspection was made. Changes in working platforms were made only under the supervision of an inspector. When each sub-contractor with his new force of men appeared on the job, it was made plain that co-operation with the rules and regulations for the prevention of accidents in building operations would be required.

In one large building in the course of construction, more than 2,000 men connected with the building trades were employed at one time. From February 27, 1928 until September 22, 1928, 165 inspections of scaffolding, staging, hoisting machinery and working platforms were made of this building. Notwithstanding this regular supervision, three workmen sustained fatal injuries in the course of their employment. One was killed when planking used on a concrete form fell from the top of the building and struck him on the head while he was doing excavation work outside the foundation wall of the building. The other two occurred on the afternoon of the same day, when cement hoppers placed upon a temporary floor without suitable shoring support collapsed, falling upon the men who worked on the lower story and crushed them to death. No violations of the rules and regulations for the prevention of accidents in building operations took place in any of these cases.

In another building erected during the year, daily inspections were made, covering a period of several months. The accidents on this job were slight, consisting largely of back strains, injuries from handling tools and materials, and getting foreign particles in the eyes. No fatal



or serious accident took place on this building. There was a maximum of 355 men employed in its construction.

The building of a large railroad station during the year in the city of Boston was accomplished without loss of life of a single employee. An inspector was assigned to cover these operations from the first day when the work began, spending all his hours every day on this job, approximately one hundred and fifty days being devoted to this purpose. He personally supervised every change of staging, scaffolding and working platforms used in the erection of this structure. Other inspectors worked with him at times when assistance was necessary. Co-operation was received from contractors and employees and the depot carried to its completion without the loss of a single workman engaged in its erection. There was approximately a total of one thousand men employed on these operations at one time, and seventy-eight sub-contractors took part in the operations. These included pile drivers, steel erectors, electricians, painters, iron workers, bricklayers, carpenters, plumbers, mosaic and tile layers, elevator constructors and other mechanics in this line. Accidents sustained by these employees were of a minor nature.

The building trades are afflicted with a greater number of non-machinery accidents than any other industry. They are filled with hazards not found in other lines of employment. In manufacturing establishments, processes of work are practically the same day after day, while in the building industry conditions are changing constantly. The shifting of the working force on the job is peculiar to the building trades. It multiplies the occasions of danger. Workmen succeeding each other in the different stages of construction frequently assume unnecessary risks. This experience is commonly found in the investigation of building trade accidents by inspectors of the division of industrial safety. As building operations are diversified in type and carried on at widely different points, these conditions make extremely difficult satisfactory accident prevention work.

Construction work will always present serious difficulties which are not encountered in industries with a fixed habitation. The men who carry on the processes of building, as a general thing, are a more fluctuating group than those engaged in manufacturing. Frequently, the owner and contractor are found anxious to push the job to completion with all practical speed. These things conspire to make difficult the task of maintaining a reasonable degree of safety in the erection of the structure. The prevention of accidents in the building trades industry is best promoted when interest is shown on the part of the contractor, the safety equipment kept in good condition, proper supervision by superintendents and foremen and education of workmen in safe methods of work.

Realizing the need for intensive work in this direction, the commissioner of labor and industries was successful in securing from the legislature of 1927 a greater appropriation for this work and authorization to add four more inspectors of building operations to the present staff. This provided a substantial increase in the protection afforded the building trade workmen during the year and a total of 7,867 inspections of such operations occurred. Some of these concerned floors of buildings in the course of construction, littered with material in many instances. These constituted a grave menace to those employed and caused falls which resulted in fatal or other serious injuries. Contractors were required to exercise proper supervision of floors and keep them free from material over which workmen might stumble and fall. This work was extended to preventing workmen and mechanics from riding on material being hoisted, lifted or carried up by means of chains, ropes, cables or derricks. In the cold weather period it was found necessary to stress constantly the requirements with regard to the use of hoisting machines. These must be covered or encased with suitable boarding for the purpose of affording adequate protection to the operator from falling material and inclement weather. In all the large building operations in the state,

daily inspection was made of staging and machinery, including hoists and elevators which were examined carefully, and compliance was secured with rules to safeguard work places of employees.

The building trades industry contributed 13.9% of all industrial accidents in Massachusetts for the year ending June 30, 1927; 58 of these were fatal, or 18.3% of all such injuries in that year. There were 6 permanent total disability cases, or 35.3% of all such injuries in that same period. As to permanent partial disability injuries, including loss of fingers, hands, feet, toes or limbs or the sight of eyes, there was a total number of 106, or 8.6% of all such injuries.

The erection of buildings was second in the classification of total tabulatable injuries by industries. From this source came more accidents than the iron and steel trades, the textile industry, transportation work, shoe and leather business, lumber or the making of food. It was responsible for 17.1% of all time lost because of industrial accidents during the year. Injuries in this employment averaged 87 days' incapacity for each accident. Publicity was given to those facts by inspectors at noonday conferences on the large buildings under construction, and co-operation urged in making work places safe.

#### *Special Investigations*

These included inspection of machinery and equipment used in the cranberry industry. Nearly all the territory used for this purpose on Cape Cod was visited. The work included the supervision of machinery equipment used in this connection. Gasoline and electric motors now provide operating power in the screening house where women and children are employed. Conveyor systems, operated by power transmission machinery, run steadily in the screen houses. Engine picker machines are used in the harvesting of the berries. This investigation was carried on in 58 establishments where this work was done. Stairways in these places were not properly railed and openings in floors not guarded; power-driven separators in screen houses were equipped with shafting containing protruding set screws; chain drives were open to contact; overhead belts were unguarded and protruding shaft ends and balance wheels on gasoline engines created hazards in the work places of employees; lighting facilities were not adequate or suitable reflectors used; medical chests were not provided and toilet facilities did not meet requirements. Orders were issued in this connection and prompt compliance with the law took place.

#### *Stone Crushing*

Stone crushing equipment was given careful inspection. Municipal plants provided with this equipment are often located on the outskirts of cities and towns. Dangerous employment conditions were found in some of these, and conferences were held with local authorities to provide safeguarding of work places.

#### *Safeguarding Machinery by Manufacturers*

Inspectors have continued the practice of reporting new installation of machinery without suitable devices to cover inrunning gears and other dangerous parts exposed to contact. This information was made the basis of correspondence with machinery manufacturers when it appeared that these should be provided in the course of construction. Nearly all modern machine builders now give this principle attention in the making of their product. Laundry machinery is a conspicuous example of this progress in recent years. Extractors are now marketed with effective interlocking devices and mangles equipped with suitable guards to protect employees from dangerous exposure. This improvement is also true in many other types of machinery. Co-operation has been secured from manufacturers in reducing operating hazards through changes in machinery construction. Concerns engaged in this business indicate an interest in producing power-operating mechanism with the least attendant



danger. They respond quickly to practical suggestions for diminishing the occupational risk of the employee. Reports of accidents of unusual severity figured in these negotiations, and the information secured made available to designers and draftsmen of machinery parts. This work was given close attention during the year.

### *Employment of Minors in Proximity to Machinery*

Preventing the employment of children in the operation of hazardous machinery has a prominent place in the work of factory inspection. The statutes enumerate a large number of such machines and direct that no person shall employ a minor under sixteen or permit him to work in operating or assist in operating any of them. The employment of such persons is also forbidden in oiling or cleaning hazardous machinery or in proximity to any unguarded belts, machinery or gearing while such equipment is in motion.

In addition to these, there is a list of employments prohibited by statute for those under eighteen years of age, which makes illegal the employment of a minor in the operation of motor vehicles of any description. Difficulties were experienced in the enforcement of this law, since minors sixteen years of age are legally authorized to operate automobiles. When it was made known that such employment was illegal, there was prompt compliance with the law.

Preventing the exposure of children to dangers under these circumstances has been stressed during the year, and 69 orders requiring compliance with the law for their protection were issued.

In some establishments children under 16 years of age were found working on laundry machinery or taking material away from circular or band saws or in proximity to stamping machines used in sheet metal and tinware and near other dangerous machinery and gearing while in motion. Special effort was made in this connection in tenant factory buildings where the practice of operating the elevator was common among employees in each place of business. An active campaign was made in buildings of this type and the support of many concerns enlisted in keeping employed children away from elevator dangers. This activity was also extended to cover protection for errand boys, messengers, newspaper boys and other children entering the building and attempting to operate the elevator.

### *Free Egress from Factory Buildings*

Maintaining free egress in places of employment was given careful attention in the inspection of industrial establishments. This included requiring that explosives or inflammable compounds be not stored or used in any factory so as to obstruct or render hazardous the egress of operators in case of fire. It was necessary to issue 89 orders to factories, workshops and manufacturing establishments where doors were locked, bolted or otherwise fastened during the hours of labor to prevent free egress. These included small workshops in the clothing trade, shoe factories, warehouses in which workshops were maintained and other buildings where the storing of materials for use in the manufacture of products is necessary. In some cases it was found certain doors were locked, although means of egress were provided from other parts of the room. Bringing in a large supply of leather and storing it temporarily in front of an egress door was found common in some factories. Passageways and aisles filled with heavy rolls of paper which menaced the safety of employees in the case of sudden fire or explosion was another condition discovered. This was found in one of the largest newspaper publishing concerns in the state. Prompt compliance with the requirements took place when these conditions were made known to the management. Coöperation in this work was received from the fire department heads.

## LABOR LAWS—WOMEN AND CHILDREN

Inspections were made in 44,385 manufacturing, mechanical and mercantile establishments, and 8,562 orders were issued requiring the posting of time notices, the procuring and returning of certificates prohibiting children from working at dangerous trades and employment of women and minors at time other than stated on the printed notice. In establishments where women were employed in shifts, frequent visits were made to determine that lists of names were maintained correctly and available for inspection. This included personal interviews with employees before the hours for beginning work and at the expiration of each shift for the purpose of verification. The irregularities discovered were promptly corrected, but in some cases prosecution was necessary. In each district the posting of time notices in a conspicuous place where women were employed was stressed during the year. The modern well-equipped establishment usually presents no difficulty in this connection, but in the small laundries and mercantiles the inspector often discovers the notices soiled or torn and frequently unfit for practical use. Under these circumstances an adequate supply of time notices were left with the employer with instructions to change them when necessary and to communicate with the department if assistance was needed in properly posting them. This arrangement met with much coöperation and better compliance with the law was secured.

Closely related to the efficient enforcement of laws relating to the restriction upon the employment of women and minors is the night inspection of industrial establishments. Especially is this true of restaurants and lunch rooms where small groups of women are employed. Here they may be permitted to work at any hour of the night or any day of the week if over twenty-one years of age, although subject to the restrictions of laboring for not more than nine hours in one day nor more than forty-eight hours in a week. Credit should be given to the inspection force for its willingness to do this work in the late hours of the night and at early times in the morning, often after an arduous day in other places of employment.

Certain manufacturing plants where women could be legally employed until 10 p. m. were also inspected at night during their working hours.

Special inquiry was made as to employment in more than one establishment and this necessitated checking up on hours of their employment in other establishments during the day. These places included dressmaking and garment shops, box making, shoe factories, bakeries, theatres and in fur, candy, jewelry and other manufacturing establishments.

Hours of work for women in hotels were given careful supervision. Here night work is a difficult problem for the inspector to deal with, for it includes the employment of women in shifts. To determine if compliance with the statutes prevailed in many of the large hotels, investigations were timed with occasions when large numbers of persons would be attracted because of unusual celebrations and events. Employment managers in these places coöperated with the department in posting the time notices properly and keeping accurate lists of shifts on file. These were verified through interviewing the employees in kitchens, laundries, dining rooms and linen rooms and securing from each complete information as to the hours worked. Fewer complaints from these places of employment over former years seemed to confirm reports of inspectors, indicating good co-operation by hotels in complying with the law.

The employment of girls under twenty-one years of age as cabaret dancers after ten o'clock at night in certain types of restaurants presented a special reason for inspections of these places during the night hours. Vigilant work in this respect during the year was most effective in preventing this unlawful practice.

In a decision made late in the year 1927, the Massachusetts Supreme Judicial Court declared that girls under twenty-one years of age, em-



ployed in dancing in cabaret performances at certain hours of the night, were permitted to work in violation of statutes regulating their employment. (See Massachusetts Reports 261, pp. 226 and 227.) This decision strengthened the work of the department in the enforcement of this law. Legal counsel for proprietors of these establishments, many of whom were unfamiliar with the English language, made known the import of this decision to their clients and promptly gave assurance to the department that the practice would be discontinued. Four inspectors were assigned to certain sections of Greater Boston and covered these places nightly at different periods of the year. This supervision established the fact that statutes for the protection of women in such employment were fully complied with and that fewer young girls were employed at any hours of the days in cabaret dancing as a consequence.

The policy of giving thorough inspection to seashore establishments was carried on during the summer season. To these pleasure resorts came business men who engaged in the hotel and restaurant industry. Some of these operated laundries, stores, dyeing and cleansing establishments available for the patronage of the summer vacationist. Others came to conduct amusement enterprises or novelty stores or to operate pleasure devices, including games of chance. The season is short and employees working at these places are anxious to obtain the maximum earning. Women experienced only in private domestic service are frequently secured to do hotel work from employment agencies throughout the state. College students of both sexes, eager to earn tuition for the next year, come from other parts of the country to work on the beaches of Cape Cod. Many of these find places for such work through the recommendation of prominent summer residents who have an interest in their welfare. Hastily organized under these circumstances to meet the rush of business in the early holidays of the summer, there is the danger of illegal adjustment in employment conditions unless the legal provisions are made known by this department. To meet this condition, inspections are made early in the season. This includes the posting of time notices; making known the restrictions on hours of employment for women and minors; laws relating to the procuring and returning of certificates; requirements of the Sunday law and the provisions for one day's rest in seven in certain establishments; and the examination of machinery in laundries and other places. Orders are then issued if the occasion requires it and inspections are again made at a later date to determine if compliance with the statutes prevails. General co-operation with the law is readily given under these circumstances and the protection guaranteed by statutes afforded these employees. Prosecution takes place when such action is necessary. During the season, court action was taken in a few cases where deliberate violation of law took place in connection with the employment of children.

In July and August this work was also done in many of the inland parks and amusement places in the central and western parts of the state. In restaurant and lunch rooms conducted in these places time notices were not on file, and the inspector assisted the proprietor in posting them. All of the requirements in relation to the employment of women were explained. These included providing suitable seats for women when not necessarily engaged in the active duties of their employment; proper toilet facilities with adequate privacy; forbidding the employment of girls under twenty-one years of age after 10 o'clock at night at these places and those under sixteen from working after 6 o'clock in the evening.

#### *Child Labor*

The employment of children in factories, workshops, manufacturing, mechanical and other industrial establishments was regularly supervised. This was also true in other types of employment at which children may be lawfully occupied. Careful examination was made of certificates on file, and work done by the child was investigated to determine if the pro-



visions of the law were complied with. In factories and mills, in manufacturing and mercantile establishments, in laundries, bakeries and wood-working plants this practice was followed regularly by the inspectors. In cases where children were found working in proximity to dangerous machinery, it was made plain to the employer that this was forbidden by statute. Some of these children were engaged in duties which brought them close to dough-mixing apparatus, circular or band saws, wood shapers, punch presses, wood jointers and unguarded belts, machinery or gearing. Verbal orders issued under these circumstances were immediately complied with and the employed children afforded legal protection.

Co-operation in this connection is readily given by the well-established concerns of Massachusetts. In these places certificates are secured promptly, as required by the statute and returned within two days after the termination of the child's employment. During the year 547 orders in relation to the legal requirements for the employment of children under sixteen years of age were issued and complied with. Inspections made in these places of employment included checking up the hours worked by children as indicated on the posted notice. The hours of attendance upon continuation school were also verified in order to determine the actual number of hours they could be employed. There is good co-operation with employers in complying with these requirements of the child labor law. Regular supervision was maintained in establishments where children were given casual employment. These included chain stores, private bowling alleys, theatres, road side stands, dance halls and similar places. In many of the chain stores, the cash and carry system has caused illegal employment of small boys in delivering goods purchased in these places. In some cases, very young boys were found carrying heavy parcels and bags of potatoes up three flights of stairs. In this work, police departments in the large cities operated jointly with the inspectors of this division.

Violations of the law protecting children in this respect were reported by school superintendents, attendance officers and other public officials. These were given prompt attention, and prosecution took place in some cases. Instances of this kind included children who were allowed to work late at night and were unable to do their school work the following day. This work occupied a prominent place in the inspections made at beach resorts and amusement parks in the summertime. Conditions under which children were employed in these places were closely examined, and this resulted in protecting them from harmful types of employment. Instances were found of children under sixteen years of age working after 6 o'clock in the evening and before 6:30 in the morning. These are busy periods at the seashore resorts, when trade is brisk and sales and deliveries are made. Under these circumstances children were occasionally found employed during prohibited hours in small stores and on motor trucks. Synchronizing with the time of this employment, inspections were made and the statutory requirements enforced. This succeeded in establishing a better understanding of the law among those engaged in business at the summer resorts.

To supervise part time employment of children in many places, inspections were made in the early evening hours. Much of this work was done on Saturdays and nights before holidays. In some cases, where the violation of law justified such action, prosecution followed.

Employment of children by milk drivers in the early morning was investigated by inspectors who worked in groups, covering the urban districts of the state. Much was accomplished by this practice in preventing one of the harmful types of child labor. There was coöperation received from the superintendents of schools, attendance officers and directors of continuation schools in conveying to this division information regarding violation of child labor laws.

The appearance of children in theatrical and dancing exhibitions was given close supervision. This usually concerned child vocalists and per-

formers on musical instruments. The statute forbids the employment or exhibition of such children except as musicians in a church, chapel, school or school exhibition, but allows them to take part in a festival, concert or musical exhibition upon the special written permission of the aldermen or selectmen. Many of these children are well trained at considerable expense to their parents and often exhibit much talent in their specialties. They are frequently scheduled for appearance in public places under the direction of booking agencies. These agencies were interviewed at different times during the year and the ages of the children investigated to determine if it were lawful for them to take part in an exhibition. The law in this connection was made clear on many occasions to municipal authorities concerning the statutory provisions in such cases. Coöperation generally followed conferences held with them for this purpose. The coming of theatrical troupes from other states into Massachusetts has presented a difficult problem in this connection. Children under fifteen years of age often have a prominent part in the performance and are usually announced in headlines of the daily papers. The usual experience in these cases is that while an investigation is being made in this matter, the public is aroused and complaints are filed with this office. When the law is made known to the managers of these theatrical troupes, adjustment is quickly made and compliance with the law secured.

Visiting circuses, touring the country and coming into this state each year, bring a similar experience to the division. Child acrobats and contortionists occasionally are booked for a place in the performance, and these come into Massachusetts without knowledge of the law preventing such employment in any public place. Owners of these enterprises quickly respond to the requirements of the law when its provisions are made known to them. The number of orders relative to procuring and returning certificates issued during the year was 4,307.

#### *Overtime Employment of Women*

Indicating coöperation of the public in the administration of the 48-hour law, 417 complaints were received alleging overtime employment of women and minors. Investigation was made in each one of these, and in 156 cases there was found to be a violation of the statute. In most of these there was employment at time other than as stated on the printed notice. This was especially true in factories and workshops where men and women were employed together and paid on the piece rate basis. In these establishments the practice of women reporting late for work and then remaining after the hours designated on the time notice to complete the amount of output required was given careful attention. Inspectors visited shoe factories and garment manufacturing establishments at the closing hours to correct these violations of the statute. In very few cases were large crews of women permitted to work over nine hours in one day. Nearly all such illegal employment was restricted to small numbers of key operators whose output was desired to maintain volume of plant productions.

#### *Seats for Women and Children*

In the inspection of industrial establishments, attention was given to the seats furnished women and children as required by law. It is provided in the statute that women and children shall be furnished with suitable seats and permitted to use them while not necessarily engaged in the active duties of their employment. Department stores were inspected frequently during the year to determine if compliance with these requirements existed. Fluctuation of trade and changes in methods of merchandising made occasional readjustment of seats necessary to meet the conditions. In such cases coöperation was promptly given the department.

Difficulty was experienced in other types of employment where it was contended work could not be done in a sitting position. This condition was found in certain small establishments, and, when it was found reasonable to require them, seats were procured.



In manufacturing establishments, better chairs were provided in some cases when it appeared the ones used were unsuitable and did not comply with the requirements.

Careful examination was made of seating facilities in workshops where the work was done exclusively in sitting position. In some cases these were found to be inadequate, and better equipment was secured for the employees. There were 56 orders issued by the department, requiring proper seats for women and children, and these were complied with.

#### *Lunch Period for Women and Children*

It was necessary to issue 31 orders to comply with the law providing that no child or woman shall be employed for more than six hours at one time in a factory or workshop, in which five or more such persons are employed, without an interval of at least forty-five minutes for a meal. These concerned small workshops where the number of women employed had increased and came within the scope of the provisions. In some of these cases the employment of a smaller number of such persons permitted the establishment to operate previously on a uniform schedule of hours with thirty minutes for the lunch period. Compliance with the law took place promptly when the requirements were explained.

#### BRANCH OFFICES

Branch offices of this division are maintained in five large industrial centers. These are located in Fall River, Lawrence, Worcester, Springfield and Pittsfield. From these sources thousands of employers and employees are provided with information concerning the labor laws. This arrangement has made possible practical coöperation in securing compliance with these requirements.

Daily reports received from these offices indicate the nature of the contact with the public.

Telephone calls from industrial establishments are made an item of record and also requests made for bulletins containing the labor laws or information concerning the law. Employment managers and factory officials call for information on these subjects—employment of minors under fourteen years of age, one day's rest in seven for employees in manufacturing and mercantile establishments, employment on Sunday in other kinds of work, information regarding employment and educational certificates, employment of minors on dangerous machinery, on stagings and in operating motor vehicles. Other requests for information include problems concerning exhaust systems and general ventilation, the law in relation to employment on legal holidays, the appearance of children on the stage in theatrical performances, employment of non-citizens in the construction of public works, laborers' vacations, factory lighting, industrial poisons and their use, eight-hour day in public employment, hours of work for women employed in laboring, in connection with the requirements for thermometers in textile factories where water is introduced for humidifying purposes, and the law in relation to weavers' specifications and problems in connection with the safeguarding of machinery.

Workmen seeking information and advice concerning injuries arising out of and in the course of their employment come for assistance. Careful record is made of all the facts in each case and this is presented to the department of industrial accidents for its consideration and action. There is good coöperation between the two departments in this connection and the service is appreciated by workmen and employers alike. Matters pertaining to other state departments are brought to their attention through the medium of the branch offices. These facts indicate the varied character of the information sought and the numerous sources from which the requests come. Through this means practical service is rendered the public.

Time notices are forwarded to all industrial establishments located in the district covered by the branch office. Complaints made regarding vio-

lations of the weekly payment law are handled directly and wages due the employee are usually paid immediately. When this does not take place, prosecution of the case is conducted by an inspector in the local court. This service is of great benefit to employees with families dependent upon their income. Advice is given in some of these cases which do not come within the scope of the criminal statute, and persons involved are advised regarding the proper remedy.

### INDUSTRIAL HEALTH

Chiefly through the inspection of industrial plants the exposure of employees to conditions dangerous to health is ascertained. In this connection manufacturing or mechanical processes, involving the use of industrial poisons or generating harmful dusts and fumes, are given special attention. The dangers arising out of such employment are brought within control through enforcing provisions of law designed to protect the health of the employee. Plants where such hazards prevail are regularly supervised and co-operation is maintained in safeguarding against these unwholesome conditions. Tangible results accomplished during the year in this connection are indicated in the compliance with orders issued by the department through requisition from the inspection force. There were 3,903 of these, including 288 concerned with ventilation, humidity and removal of dust and fumes and other impurities injurious to health. This work was stressed during the season when general ventilation is impaired by reason of closed doors and windows.

The care given to providing suitable toilet and washing facilities is manifested in the acquiescence shown with 1,855 others. Many of these included the furnishing of running hot and cold water in establishments where there was exposure to poisonous substances or liquids.

In 448 cases the compliance brought better lighting facilities to persons employed at work in places where there was need for protection of the eyes.

The increased use of chemicals and toxic substances in the processes of industry has brought new dangers in many work places. During the year 2,512 places of employment were inspected where these materials were used in connection with the manufacturing process. Establishments where these conditions prevail were given frequent inspection and record made of the industrial poisons used. Industries reported in this connection included: Leather-finishing; rubber factories; shoe factories and findings, including wood heels; making of rubber products; dyeing and cleansing plant; the manufacture of cement, storage batteries, brake linings, textile fabric, refrigerators, paints; automobile-body manufacturing; metal plating and other products. Processes in these lines of manufacture required the use of acetone, amyl acetate, wood alcohol, benzol, carbon tetrachloride, cyanide of potassium, anilin, lead oxide, benzine, chromic acid, mercury, sulphuric acid and turpentine oil. Employment in such places was given constant supervision of health conditions. Special attention was given plants of this description and careful study made of exposure of the employees. Mechanical enclosures at the point of origin to prevent inhalation, the use of suitable containers and hand tools, providing respirators and masks, rubber gloves and other devices were some of the means required to protect the employees. Equipment used to exhaust impurities injurious to health was frequently tested.

During the year reports in 260 cases of patients suffering from diseases of occupation were received from physicians, hospitals and clinics. In the granite centers of Massachusetts, frequent inspection was made of work sheds. Close attention was given to exhaust systems in connection with surface-grinding machinery. Some of these were found in need of repair and orders issued to correct the defects were promptly complied with. The inhalation of mineral and metallic dusts is a prolific cause of respiratory disease in this trade. Each month the information received in this connection was filed with the department of public health. This



included the name and address of the employer and employee, the type of employment and the nature of the disease.

In addition to providing mechanical enclosure at the point of origin, where this was practicable, other recommendations were made to protect the workman. These included the use of suitable containers and hand tools, the furnishing of masks and respirators, rubber gloves and other devices to prevent harmful contact and safeguard against the exposure to toxic substances. During the year, 3,903 orders dealing with dangerous and insanitary conditions in factory and workshop were complied with. Regular inspection was carried on in tenant factory buildings, where this precaution was necessary to maintain sanitary conditions. Nearly all of these structures were erected prior to the passage of laws and the adopting of rules dealing with these matters. Very few of these places were built for the purpose of housing workshops and are not suitable for practical use in this connection. Some of the buildings are given over to social clubs and other types of organizations where people gather in the evening and are permitted to use toilets reserved for employees during the daytime. This condition means more frequent inspection of such places to maintain compliance with the law. Keeping workshops in such places clean and sanitary was stressed by inspectors in districts where these conditions prevail.

From concerns located in modern factory buildings, active and regular coöperation is secured in maintaining a high standard of compliance with laws for sanitation and health of employees. This includes keeping clean washbowls, sinks or other appliances used in connection with separate washing facilities available for each sex. These are provided within reasonable access, clearly lighted at all times during working hours, and the floors in and around them kept clean. In special industries or departments where there is undue exposure to poisonous substances or liquids, or where the work is especially dirty, clean, running hot and cold water is provided.

#### *Dust Removal*

Special attention was given to dust from emery and grinding, polishing and buffing wheels, both in metal-working establishments and shoe factories; sanders in wood-working plants and workshops in which lead and arsenic were used. Foundry operations producing smoke, steam, gases or dust injurious to the health and eyes were included. Much difficulty was experienced in procuring the use of respirators among employees in the cleaning of castings. In some of these operations there is exposure to the inhalation of silica dust. Workmen complained of the hardship in wearing the devices provided to control this danger, and frequently failed to use them. In an effort to deal with this hazard to foundry employees, inspectors stressed the need of using respirators when the dust arising from the cleaning of castings appeared to be injurious to the health of the cleaner. This was done through interviews with the plant management, safety engineers, registered nurses and others in charge of first aid rooms, and the operators themselves. Orders issued by the department to secure adequate supply of suitable respirators were promptly complied with. Suitable hoods, ventilators, fans and other mechanical means were also installed to protect the health of the employees. There was a total of 265 orders issued by the department to control the health hazards of this type and these were promptly complied with.

#### *First Aid Treatment*

There were 1,044 orders complied with during the year in relation to the requirements for first aid treatment. In 1926, there were 5,494, or 9.2% of all the total tabulatable injuries, which resulted in infection. In 1927, there was a total of 5,221 injuries of this type, or 8.1% of all the tabulatable injuries. A comparison of these figures indicates that there were 273 less in 1927 than in the preceding year. In 1927, one out of every twelve tabulatable injuries resulted in an infection as compared



with one out of every ten in 1926 and one out of every eleven in 1925. The department of industrial accidents, in its Table No. 9 for these two years, presents clearly the nature of these injuries and indicates the substantial reduction in the degree of their severity. These are given herewith:

			Permanent partial disability
1926	Totals	Deaths	
Abrasions, bruises and contusions	690	5	—
Burns and scalds	98	2	—
Cuts, punctures, lacerations	3,715	13	—
Fractures	3	—	—
Sprains and strains	8	1	—
All other	895	6	—
Amputations, loss of use	84	—	84
Occupational	1	—	—
Totals	5,494	27	84
1927			
Abrasions, bruises and contusions	934	5	—
Burns and scalds	120	—	—
Cuts, punctures, lacerations	3,074	10	—
Fractures	6	2	—
Sprains and strains	4	—	—
All other	1,072	—	2
Amputations, loss of use	7	—	7
Occupational	4	—	—
Totals	5,221	17	9

Experience with this work indicates that the treating of burns, cuts, punctures, bruises and lacerations promptly often means the prevention of infection in many cases. Such treatment does much to reduce the severity of injury and diminish the period of incapacity because of disability. In some places it was found that proper records of all cases given first aid treatment were not maintained. Attention was directed to the requirements for keeping this information accurately, making it available for examination by the inspection force. Coöperation was received in these cases and improvement made in keeping the records. This enabled inspectors to determine more accurately the location of plants where injuries occur.

The requirements for the care of employees injured or taken ill in industrial establishments provide that in every manufacturing or mechanical establishment employing one hundred or more persons at least one first aid or emergency room suitably located and properly heated shall be provided in which those injured or taken ill upon the premises may receive first aid treatment. Such a room is required to be placed in the charge of a qualified nurse or other person trained in and competent to administer first aid, and this person must be employed on the premises on call when necessary to render this service. Certain equipment is required in this connection for the special purpose of preventing infection of slight injuries. During the year inspectors made special inquiry as to the qualifications of those doing this work.

For the purpose of maintaining proper standards in the first aid treatment of injuries, persons employed in this work are required to present a written statement of a reputable physician or a diploma from some authorized source, indicating they are qualified to render first aid treatment as required by the rules and regulations. Coöperation was received from many firms in this connection and in some cases suitable training was provided for the employees who did this work. This instruction was

furnished through courses conducted under the auspices of hospitals, physicians and other organizations interested in this work.

### *Storage Batteries*

Establishments engaged in the manufacture of storage batteries received frequent inspection during the year. All of these are small workshops, employing small groups of workmen. The hand-mixing of paste is done on the pasting benches, and there is need of constant supervision to prevent lead poisoning. In these places oxides of lead constitute one of the leading hazards in employment. It is much more dangerous than work with metallic lead. The oxides are usually found on the platform where mixtures stand and on the benches where these men work. Wooden floors easily become permeated with the lead oxides and cannot be properly cleaned. Red lead and litharge are weighed dry and mixed with diluted sulphuric acid. These ingredients form a paste which is pressed into interstices of leaden grids. Fumes of lead from kettles and from lead-burning operations add to the employment hazard. Prevention of occupational illness under these circumstances is difficult and requires means for the control of dangers arising from lead oxide dust and lead fumes. Personal cleanliness of the worker is most essential and medical supervision as well. To protect the health of the employees in these places, concerns were required to comply with the following requirements based upon the provisions of the statutes:

1. Hooding and providing with exhaust blower the paste mixer churns, lead crucibles, plate-casting molds and pasting tables.

2. Floors to be swept regularly when moistened or kept clean by vacuum processes.

3. Providing hot and cold water for washing purposes and individual lockers separate from the workroom.

4. Respirators to be used when weighing out lead oxide.

5. Lead-burning to be done upon a table or bench provided with a mesh top and connected underneath with an exhaust blower or exhaust system.

As a means of protecting health of employees, these suggestions were proposed:

1. The pasting tables should be constructed with a channel around the outer edge and through the center to prevent particles of paste falling on the floor or coming in contact with clothing of the workmen.

2. Charging should be done in a separate room with general ventilation by mechanical means.

3. Providing a lunch room for the workmen separate from the workroom and locker room.

4. Explaining to the workmen the nature of hazards in handling the lead products and furnishing knowledge concerning personal hygiene.

Co-operation was received from the concerns engaged in this business and compliance with these provisions promptly given. Approximately two hundred men are employed in the manufacture of storage batteries in Massachusetts. In these places there is general compliance with the laws protecting health of employees. The attendant dangers in the trade are well-known to workmen and employer, and co-operation is given to the state requirements for the protection of health.

### *Chromium Plating*

Because of the growth of chromium plating in certain industries, investigation was made of this process to determine the health hazards involved and the preventive measures to be used in removing them. Inspections made in these establishments included special attention to methods for control of the acid spray at the point of origin. In the plating rooms visited, removing the acid mist was accomplished by drawing air laterally across the tanks. The typical ventilation system for chromium plating consists of a large, verticle sheet-iron flue leading to a suction fan, divided into four smaller flues, each of which is connected



with a horizontal chamber with a narrow slot or duct along the upper edge of each plating tank. This device is superior to the system of vertical ventilation which draws the spray past the face of the operator working over the tank.

In a recent study made by the United States Public Health Service, physical examination was made of twenty-three workers employed in six plants, in order to learn the effect of chromic acid exposure on their health. In fourteen of these actually engaged in plating operations, six of them were affected with chrome holes, most of them being on the hands. It was determined that this ulcerated condition was not caused by exposure to the acid dust, but was due to contact of the broken skin with acid solution. This investigation brought out the fact that persons not engaged in chromium plating, but at work not far from the tanks and exposed to only a small amount of acid mist for a very short time, showed some injury to the nasal passage, which indicated that chromic acid was the causative agent. Two important conclusions from the clinical findings in this study are that exposure to small amounts of acid mist for a short period of time is attended by some injury to the nasal septum and that contact with the solution produces chrome ulcers or holes on the hands or other parts of the body.

Serious cases of this description have not yet appeared in the chromium-plating establishments of this state. Injuries sustained by employees engaged in this work show only minor degree of severity. In some of the workshops visited it was found that care was not exercised in handling chromic acid. Wooden floors were soaked with chromic acid drippings. This presented a hazard likely to cause ulceration of the feet if rubber boots or overshoes are not worn. In these establishments, nickel, brass, copper and silver plating is done, necessitating the use of a large number of poisons and chemicals. These include white arsenic, corrosive sublimate, carbonate of chromium, barium sulphide, copper carbonate, silver chloride, nitric, hydrochloric and sulphuric acids, nickel and copper sulphide and cyanides of sodium and zinc. The chromic acid is received in steel drums containing about 400 pounds of the caustic material. When opening the drum and scooping out the coarse lumps and powdered dust, the operator should wear a special type of respirator especially adapted to such operations as chemical-mixing and plating. Inspectors stressed the need of these devices and requirements of ventilation facilities. Employees were advised to have lesions contracted in the course of employment given prompt attention by a physician. Medical or surgical chests were maintained according to the requirements for first aid treatment. Rubber boots, gloves and aprons were advised for use of the employees to prevent contact of chromic acid with any abraded skin.

### *Radium Poisoning*

The effect of the use of radioactive substances on the health of workers in painting the dials of watches and clocks with luminous paint engaged the attention of accident prevention authorities in the industrial states during the year.

Several cases of poisoning among women employees in the State of New Jersey received a considerable amount of publicity since the first death from this cause was reported in 1924. Fourteen girls, who had been employed at various times since 1917 in a plant in New Jersey manufacturing radium, died as a result of the absorption of radium through the practice of pointing the brushes in their mouths.

Three deaths from the same cause were reported in Connecticut among women watch-dial painters in a plant where three hundred other persons were employed in the same occupation.

Early in 1925 a preliminary survey of radium-using establishments was made by the United States Bureau of Labor Statistics. It was intended at the time the survey was started to make a complete study of the plant conditions and the effects of the use of the radioactive substances on the



health of the employees. It developed, however, that to properly carry through such a study would require greater technical resources than were at the disposal of the bureau, and the study was discontinued for a time. This investigation was afterwards resumed and the subject of radium poisoning given intensive study.

It was believed that the practice of pointing the brush with the lips and tongue was the sole cause of this disease to employees, but an official of the radium-manufacturing concern, who did not indulge in this insanitary practice, became afflicted with radium poisoning, and he suffered from an impoverishment of the blood corpuscles, which produced anaemia. His death stimulated greater activity in the study of employment dangers in connection with the manufacture of radium, and eminent authorities are now engaged in research work concerning the properties of radium and in the standardization of methods to protect the employee.

Special investigation was made in the plants of this State where radium was used in painting dials of watches and clocks. In these places workmen and employers were interviewed regarding methods used in painting dials of luminous watches and clocks. They appeared to be well informed as to the possibilities of poisoning and seemed to be alert to the incidental features. The dangers from radiation and emanation were made known.

Two processes were employed in putting this material on to the dials:

One was in a paste form, where the radium is mixed with zinc sulphide, a viscous vehicle and a thinner of turpentine; the other is by the machine method, in which an impression of the figures of the watch is made of zinc sulphide and before it is dry the radium in powdered form is dusted upon the surface, which makes it luminous. No brush pointing was done in the mouth by the employees, and where the radium is used in dry form, the process is accomplished under glass to prevent any of the dust being inhaled by the operator.

The material used was secured from radium-manufacturing concerns located in other states, and these gave willing co-operation to the department in making known the materials used in their compounds. One of these concerns engaged in the manufacture of radium luminous compounds filed the following statement with this division:

"The basic material to which radium is added is phosphorescent zinc sulphide which is manufactured by us in our laboratory here. The radium is added to the phosphorescent zinc sulphide in varying amounts. The quantity of radium in each gram of compound determines the prices. We have been engaged in the manufacture of radium luminous compound and also in its application since 1917. The finished radium luminous compound in powder form is sold to the customer. When they receive it and apply it to watches and clocks and other indicating devices, it is usually furnished to the operators in very small quantities and immediately mixed with an adhesive to make a paint."

While the number of concerns and employees engaged in this industry in Massachusetts is comparatively small compared with those of other states, careful supervision has been given to each establishment and frequent inspection made. Coöperation has been readily secured with the statutory provisions protecting the health of employees, and good ventilation and sanitation together with the exercise of due care at the point of origin prevails in these places of employment. No case of radium necrosis or poisoning has appeared during recent years in this State.

#### *Pure Drinking Water*

Where the drinking water comes from pipes connected with the water supply for fire protection purposes, there exists a menace to the health of employees. Through the improper operation of valves, water of ques-

tionable quality may enter the drinking water system to the danger of the employees. Plants where this condition prevailed were given frequent inspection, and, in co-operation with the public health department, careful supervision maintained. These included woolen and cotton mills, car shops, rubber shoe factories, paper mills, bleachery and dye works, leather companies and tanneries. No evidence of contamination in the drinking water supply was discovered or any indication that health of employees was impaired. Some of these concerns provide for frequent analysis of the drinking water and periodical examination of gate valves. The statute requires that all industrial establishments shall provide fresh and pure drinking water to which their employees shall have access during working hours. There were forty-five orders issued during the year, requiring compliance with this law. Most of these were in small workshops where drinking water had not been provided for employees, all of which were promptly complied with.

### LIGHTING

There were 432 orders issued, requiring compliance with the provisions of the lighting code. These provided for increasing the intensity of illumination at the work, protecting employees from glare, proper shading of the lamps, better distribution of light and suitable entrance and exit lighting. Assignment of industrial operations to grades was determined without difficulty and application made to the department for review. Most of these orders were concerned with maintenance of the existing equipment. Accumulation of dust and dirt on lamps impaired the system of lighting in many cases. This reduced the intensity of illumination, and regular cleaning was advised. In some establishments it was found that polished surfaces caused eye fatigue and interference with vision. It was necessary in these cases to change the relative location of the light source and the work in order to remove the discomfort and annoyance. Proper shading of lamps occupied much attention of the inspector. In many instances it was found that shades were removed and in some cases replaced in such a manner as to impair the service for the employee. Prompt compliance with orders issued by the department was obtained. Cooperation was given by the division to many concerns in the installation of their lighting system. Requirements for suitable illumination in exits, passageways, stairways, hallways, elevator cars, washrooms, toilet rooms and other parts of the plant were made clear. Advice was given with regard to the height and location of lamps and the use of shades and reflectors and the other means necessary for a good distribution of light in the workroom. Similar assistance was given in connection with fine work, such as pattern and tool-making, and in office work, including accounting and typewriting. Lighting facilities in basements of mercantile establishments, where close discrimination of detail was required, were given special attention. Some of the large department stores cooperated thoroughly with the division in improving lighting facilities in these places.

### VENTILATION

It was necessary to issue 265 orders, requiring adequate ventilation in factories and workshops, and these were complied with. Many concerned the removal of carbon monoxide gas from the workroom. In garages, this required the installation of adjustable exhaust tubing to conduct escaping fumes from automobiles into system of exhaust equipment provided with devices to carry these fumes to the outside air. Much time was given to the problem by the chief inspector and assistance was given in advising proper means of ventilation for these establishments.

Conditions in newspaper and printing establishments were given special attention by the inspectors. In some places adequate exhaust was not provided for stereotype kettles and matrix driers; no exhaust hood for benzol table in the photo-engraving departments or hoods over glass-



cleaning tubs containing nitric acid. Smoke and fumes in burning dross from metal were allowed to escape from the stereotype room into the composing departments. Small print shops are often found with poor ventilation. Some of these are located in old buildings where improvement is difficult.

Gas-heated metal pots were found with defective exhaust pipes. Coöperation was received from newspaper concerns in removing these dangers to the health of employees, and orders issued for this purpose promptly complied with.

Other places where this work was done included metal-polishing shops, laundries, hotel kitchens, wood-working establishments and lasting rooms in shoe factories. In some of these steam and other vapors caused uncomfortable conditions for the employees.

#### SUNDAY WORK AND ONE DAY'S REST IN SEVEN

There were 150 orders issued, requiring adjustment with the statute providing for twenty-four consecutive hours of rest in every seven consecutive days. In some of these employers had failed to post in a conspicuous place on the premises a schedule containing the list of employees required or allowed to work on Sunday and designating the day of rest for each, or neglected to file a copy of the schedule or changes therein with the department. Others did not keep records of hours worked by employees. Attendants employed at gasoline stations maintained apart from garages were concerned in most of these cases. This work occupied much time of the inspectors and resulted in compliance with the legal requirements.

#### LOCKERS FOR EMPLOYEES

Separate lockers, closets or other receptacles were provided employees in compliance with 25 orders issued for this purpose by the department. These were required in establishments where the nature of the work rendered it necessary to make complete change of clothing, and included tanneries, hotels, laundries and cleaning establishments.

#### LICENSES FOR HOMEWORK

In the twelve months ending November 30, 1928, 114 licenses have been granted to persons making, altering or finishing wearing apparel in a room or apartment of a tenement or dwelling house. These were concerned principally with neckwear, aprons, athletic goods, hosiery, knit goods, sweaters, crocheting and other articles of wearing apparel. Inspection was made of the premises in each case to determine that sanitary conditions prevailed as required by law. In this connection efforts were continued to prevent wasteful visits on the part of inspectors through securing coöperation with firms in filing with the division names and addresses of persons to be employed for this purpose. No application was considered unless written assurance was given by the employer that work would be supplied. To these concerns the requirements of the law regarding the employment of minors in connection with manufacturing and mercantile establishments were made known and their responsibility explained in the case of illegal employment.

#### OCCUPATIONAL DISEASES

There were 292 cases of occupational diseases investigated during the year. These included 260 men and 32 women. Four of these cases were fatal and all were men. The 292 cases investigated, classified by diseases and industries in which they occurred, are as follows:



<i>Diseases</i>	<i>Cases</i>	<i>Diseases</i>	<i>Cases</i>
Industrial dermatitis	123	Cyanide poisoning	5
Lead poisoning	41	Benzol poisoning	4
Gas poisoning	30	Anthrax poisoning	7
Acid and oil fumes	22	Dust in lungs	4
Chrome poisoning	27	Tuberculosis	1
Eczema	12	All other	16

Total 292

<i>Industries</i>	<i>Cases</i>	<i>Industries</i>	<i>Cases</i>
Tanneries	60	Manufacturing chemicals	9
Textile	48	Printing	5
Mechanical	38	Wood-working establishments	2
Rubber mills	24	Paper mills	1
Foundry	19	Mercantile	1
Metal trades	13	Miscellaneous	62
Shoe manufacturing	10		
		Total	292

Employees in these cases worked at the following operations:

*In mechanical establishments:* Sandpapering and priming vehicles with lead coat; operator of concrete mixer; stonecutter; foreman of repair shop; cleaning cars; cement worker; painter; fur cutter; extractor; "Duco" spray operator; carpenter; cable splicer; repair man in garage; mixing lead and putty; tending salamanders; coal handler; sandpapering copper bars; polishers; acetylene burner; glazier; plumber's helper; pressman; compositor.

*In textile mills:* Wool scourer; cotton sampling; dyeing and wet finishing; second hand; printer; color mixer; back tender; kettleman in dye-house; tub washer; mangle operator; slubber; examiner in mending room.

*In shoe factories:* Ironer; staining vamps; treeing shoes; repairer; covering heels.

*In rubber factories:* Mill man; calender man; sorter; trimmer; Cameron splitter; mixer; gaiter maker; boot maker.

*Foundries:* Wet tumbling; making bronze castings; mixing metal; chill moulding; carbon steel hardener; furnace man and general helper.

*Tanneries:* Operator on putting-out machine; operator on color wheel; making tan; beam house worker; dauber; washer; helper in dye-mixing room; conveyor operator; mill man; stencilling; hair and felt work; searsoner; sorting wet skins; swabber; pressman; operating hairpin machine; fleshing machine operator.

*Miscellaneous:* Lithographic transferer; hydraulic press operator; nickel plating; handling paint; plating; salvaging brass pencil inserts; chemist; mixing putty and lead; burning lugs; enamel sprayer.

Nature of causation in these diseases included the following:

*In mechanical establishments:* Formaldehyde used in milling massage cream; dipping hands in caustic solution; working in tank with acetylene torch; repairing truck in small garage; handling junk; dust from sandpapering metals; inhaling copper dust; inhaling chromium fumes from plating tank; fumes from salamanders; poster ink and varnish; paste of powdered sand and water; chromic acid used in solution to clean plates and various dyes.

*In textile mills:* Inhaled fumes; treating brake lining with asphaltum; China oil and benzol solvent; handling dye-saturated materials; weighing dyestuffs; color splashed on hands; handling wool sprayed with solution of lard oil, mineral oil and borax; washing colors from tubs; placing yarn in chrome; handling wool soaked in sulphuric acid; used potash and water to remove color from hands.

*In shoe factories:* Handling cleansing agents for shoes, including shoe dressing; softening celluloid covers in solution of alcohol and water; cement fumes; formula of material used for filling shoe uppers.

*In metal trades:* Cleaning nickel parts; dipping metal frames into solution of gray primer; contact with lard oil base; grinding copper oxide; overcome by fumes from acetylene torch.

*In rubber mills:* Handling rubber compound; running rubberized cloth through rollers.

*In foundries:* Inhaling metal fumes and dust; gas fumes escaping from vent holes; making bronze castings; eating without washing hands; lead fumes from molten mixtures; exposure to lead fumes.

*In tanneries:* Irritations from rubbing; pulling skins from lime vats; handling skins soaked in chrome solution; making tan from soda, sulphuric acid and prepared chrome; cuts infected from lime or caustic soda; daubing aniline black, aniline blue and sulphate of iron; using cement containing gum, zinc, lithophone, lamp black, sulphur, triethyl; trimethylene diamond; handling hot rubber; spraying leather with air gun; mixing thinner of toluol, butyl and amyl acetate; operating spray gun; handling dry hides.

*Miscellaneous:* Fumes of hardening bath of chromic acid and water; daubing leather with naphtha and boiled oil; cleaning tank with benzol; handling metal in cyanide solution; working in bakelite compound of phenol, formaldehyde, carbolic acid; putting hand in nickeling salts; washing glycerine drums; handling hats which have been soaked in sulphuric acid or dyes; dipping hands in salt water; working in soap powder room; alkali solution and nickel plating solution; handling paint and brass; using paint containing lead; mixing putty and handling lead; scooping lead powder into vat of linseed oil; matching colors.

Means to prevent recurrence of these diseases included the installation of exhaust systems, the use of fans, providing good general ventilation, the installation of washing facilities, with adequate hot and cold water and shower baths, lockers, medical chest and first aid rooms, respirators, goggles, masks, wooden shoes, rubber aprons, rubber gloves, oil skin sleeves, canvas shoes and aprons and facilities for eating food.

*Lead poisoning:* There were 41 cases of this disease investigated through the year. One of these was fatal. This was a plumber's helper nineteen years of age. His duties were to assist the plumber in connection with repair work. Investigation determined that there was no continuous exposure to the handling of lead or to the inhalation of either dust, fumes or gases. A local physician made diagnosis of chronic plumbism. Medical specialists in consultation determined that relation of employment to death was speculative and cause not clearly proven. Compensation payments for injuries arising out of and in the course of employment were made on the basis of a compromised lump sum settlement.

But one woman, a bookkeeper, was included. She inhaled the fumes of bronze paint which had been applied to the steam radiation pipes in the office where she worked. Her period of incapacity for employment was of brief length.

There were fifteen cases which occurred in foundries and metal-refining establishments. Exposure to the inhalation of fumes was the causation of injury. Exhaust systems to remove dust or fumes generated in the course of the manufacturing processes were provided in the workrooms. Mechanical enclosure at the point of origin was found to be inadequate and employees inhaled toxic fumes. Control of this hazard is the first means of prevention.

Dr. Thomas W. Legge, prominent authority on occupational disease in Great Britain, emphasizes this fact. He says:

"As right notions of the causation of lead poisoning are of first importance, I emphasize again my belief, after perusal of some 25,000 reports on cases which have occurred in the past, that locally-applied exhaust ventilation is the sheet anchor in the protection of the workers from lead dust and fumes and that these alone are causative agencies."



Four of these cases occurred in the same brass foundry. The building occupied by this concern was a large brick structure rated as a model factory. Earnest effort was made by the management to conduct the business, with careful precaution to maintain the health of the workmen. Washing facilities included running hot and cold water. Individual lockers for clothing were supplied. Shower baths were available for use of the employees. Sanitary conditions were good. Bubbler systems were in use for drinking purposes. The chief products of the plant consisted of brass composition, with a large percentage of lead incorporated. Other materials used were copper, aluminum, nickel and bronze. Workrooms were clean and well-lighted by large windows on four sides. Employees were required to pour molten lead into iron moulds and use red lead in painting the finished castings. Different formulas were used for making bronze castings. Some of these required extensive use of lead. It was necessary to alter the mechanical enclosure at the point of origin and extend the hoods over a larger area. Additional exhaust equipment was provided at points where there was possible escape of fumes. Furnaces were relocated in a separate room to isolate degree of exposure. These changes promptly terminated cases of lead poisoning among employees in this plant.

In a metal refining plant, four cases developed within a few weeks of each other. This concern is engaged in the smelting of metal parts, such as battery plates, printing type, scrap lead and dross. Three of the employees suffered from acute lead colic following exposure to escaping lead fumes. Smelting furnaces were hooded to the roof of the structure and other mechanical devices provided for taking off the fumes. It was found necessary to overhaul the smelting equipment and to improve the exhaust system through enclosing the sides of the furnace. Frequent inspection of this plant made the management familiar with the requirements for the protection of health. The devices required by law for this purpose had been provided and expert medical treatment afforded the employees. Coöperation was given freely by the concern in complying with orders issued by the department for this purpose. Employees engaged in handling of paints and various processes figured in thirteen cases, four of whom worked at mixing dry colors. The ingredients used included bichromate, prussiate of soda, pig lead, sodium phosphate, aluminum sulphate and acetic acid; three were employed in mixing white lead, linseed oil and lithophone with paint. Places of employment in these cases were given special inspection and improvement made after orders were issued by the department. Better exhaust equipment is furnished, gloves and respirators made available for use of the employees and a suitable place for lunch purposes provided in other parts of the plant.

House painting was the occupation of the employees in six cases. The interior work done in this trade usually brings exposure of the employee to dust from sandpapering of painted surfaces. Failure to wear respirators as a means of preventing dangers of inhalation was the common experience in these cases.

Paint spraying equipment figured in some of these.

Others included employment in painting automobiles, mixer in rubber mill, monotype setting, in plumbing and the manufacture of lead.

Two employees worked in a storage battery establishment and were exposed to fumes from lead-burning tables and a melting pot found without exhaust equipment. Dust oxides were found on benches, floors and other utensils in the workroom. Clothing of employees showed contact with these materials. Compliance with requirements for storage battery workshops as provided for in the statute was promptly made upon receipt of orders from the department for this purpose. Running hot water was provided and shower baths installed for use of the workmen. Methods of cleaning workroom were improved. Pasting room was isolated from the rest of the plant and respirators provided for employees mixing lead and working in the charging room.



Other cases included an employee working in the enameling room of a stove manufacturing concern, in which a spray gun was used to enamel the cast iron stove parts. The material used in the spraying process included tin oxide, black oxide, valender clay and water. This material was agitated in the tumblers and carried to the various booths for use. Suction fans were provided at the rear of the booths to carry the spray away from the work place. Ample ventilation, shower baths and adequate toilet and washing facilities were provided. Blower system was found to be defective through failure of the electric switch to operate the exhaust system properly. Compliance was promptly given orders issued by the department, requiring the necessary correction.

*Benzol Poisoning:* Four cases of benzol poisoning were investigated. One of these was fatal. Careful inspection was made in the plants where they occurred and thorough examination given of mechanical means for the control of benzol fumes in the workrooms. These concerns were engaged in the manufacture of asbestos textiles, woven hose, cellulose products and crepe rubber soles. In these places effort had been made to prevent the spread of fumes through enclosing the process at the point of origin and providing good general ventilation. Frequent inspection had been made and requirements to protect employees from dangerous exposure complied with. Brief description is given herewith in each of these cases:

An employee of an asbestos textile company, engaged in the manufacture of automobile brake linings and packing for steam pumps, worked in the department where the material used in making these products was treated with asphaltum, China oil and benzol solvent. The buildings occupied in this business are of modern construction. The principal material used in the manufacture is asbestos. This is brought to the plant in a crushed form and is put through processes similar to those used in a cotton mill, which consists of picking, carding, spinning, weaving and finishing. The asbestos in the first stages of handling is very dry and an adequate blower system in the picking and carding departments is maintained to prevent small particles of this material circulating in the air. An exhaust pipe is installed in the card room, which is 3 feet in diameter and graduated to 12 inches at its source. A fan is attached to this exhaust pipe, which revolves at a speed of 648 r.p.m. To this pipe are connections attached leading to the various cards, which are entirely covered with a close-fitting metal hood attached to the blower system. In a separate building used for this purpose exclusively, the benzol department is isolated from the remainder of the plant. Five men were employed in this room and each had worked for the concern a period of several years. The concern installed a system of finishing their brake linings where the benzol is used in connection with Gilsonite, and the escape of fumes is prevented while practically 90% of the benzol is reclaimed. The benzol is brought to the plant in automobile tank trucks and conveyed through pipes into steel drums. From these sources it is forced through pipes to certain points in this room and used in various processes on the brake linings and packing used for steam pumps. There is no exposure to benzol in these processes. Naphtha used in this establishment is placed in underground tanks and pumped to where it is needed without raising fumes in the atmosphere. Inspection reports on file in the division indicate that approximately 185 persons have comprised the working force for the past six years. In 1924, the concern expended approximately \$5,000 to provide an exhaust system in the carding department in compliance with orders issued. Inspections have been made regularly, adequate first aid room is provided, machinery is well safeguarded, good local and general exhaust ventilation prevails and the small number of employees in this plant well informed concerning the dan-

gers of benzol. New apparatus was in process of installation in this establishment for the purpose of reclaiming a greater amount of the benzol when this employee was exposed to the inhalation of fumes. Two weeks afterward he complained of illness, but worked several days longer, when he consulted a physician who made a physical examination and blood test. On his advice, he entered the hospital for treatment and died in a week.

In another case a young girl nineteen years of age was employed by a concern engaged in the manufacture of crepe rubber soles. Between 400 and 500 gallons of benzol cement were used in this plant in certain months during the year. Its ingredients included benzol, rubber and rosin. Substitutes for benzol had been used in this establishment, without success, for cementing rubber heels and placing them on the rubber soles. The employee was exposed to the benzol fumes arising from an open container. She worked in a room on the second floor which was provided with a large fan operating overhead to clear the room of fumes. On the floor below the benzol cement was applied to sheets of rubber material, and two exhaust pipes located underneath the work benches removed the fumes. Inspection of the place prior to the appearance of benzol poisoning in this employee showed conditions to be good. Adequate first aid equipment was provided, good general ventilation existed, machinery carefully safeguarded, sanitary conditions were good and general compliance with the labor laws provided. One hundred persons were employed by this concern, and they have been engaged in business four years. This was the first case of benzol poisoning in the plant. The girl was confined in the hospital for several weeks and the examining physician diagnosed it as benzol poisoning. For about four months she was incapacitated for work, but was finally restored to good health. The firm has installed a conveyor system and complied with orders issued by the department, requiring greater care in the control of benzol fumes.

In a concern engaged in the manufacture of woven hose and rubber goods, a man forty-five years of age was employed operating a mixer. His place of work was located on the third floor of the building and isolated from other employees by partitions in the room. In agitating the rubber compound, benzol was used and the mixture produced applied on material used for automobile tops. The benzol was drawn from tanks located in the ground outside the building and pumped into 5-gallon cans in the agitating room. From these cans the benzol was poured into churns and the mixture agitated for a sufficient length of time, when it was carried to another room and then placed in a large horizontal tank located in front of the spreading machine. The rubber stock to which this material is then applied contained a small amount of litharge and came from a mill room located in another building. Four men were employed in this large room where the churns were located and two large suction fans provided. Ample ventilation prevailed. This concern employed 1,100 men and 100 women. A first aid room under the management of a registered nurse is maintained. Plant physician is regular in his attendance and has fixed hours each day at the plant and is on call at all times. There is good compliance with the labor laws. Very few cases of benzol poisoning have occurred in this plant.

In a plant engaged in the manufacture of cellulose products, a man twenty-two years of age was overcome with benzol fumes while cleaning out a tank. The foreman ordered this employee to clean out a nitric acid tank and was told to use kerosene in the cleaning process. Seeing benzol in a container, which had been used for



cleaning some tanks previously, he used this instead of kerosene. The tank was about 10 feet in diameter and 8 feet high, and in a short while this employee dropped to the floor unconscious. An associate helped to get him out of the tank, when he was quickly revived. Benzol is used in the manufacturing process in this plant to soak the nitrated cotton in and is conducted into tanks through pipes for this purpose. The inspection made of this plant showed that some eighty men were employed and that there was good compliance with laws requiring protection for health and safety.

*Industrial Dermatitis:* The increasing frequency of this type of occupational disease impelled the division to give careful attention to this problem. During the year investigations were made in one hundred and twenty-three cases. Of these, 106 were men and 17 women. These were nearly all due to contact with irritant dusts or acids. Inspection was made of the work place in each plant where this disease occurred among the employees. Better containers and the use of rubber gloves were urged as means to prevent exposure of employees to the dangers. Installation of adequate washing facilities and furnishing medical supplies was required in some cases. Employees engaged in handling rubber in the mixing mills and others employed in operating machines in fashioning rubber products were affected. Eleven of these occurred in one plant engaged in the manufacture of rubber footwear—seven men and four women. Medical experts representing the department of labor and industries, factory inspectors, specialists in dermatology for insurance companies and chemists in the employ of the concern joined in an effort to determine the cause of this disease and provide means for its prevention. In many of these cases diagnosis of occupational dermatitis did not appear to be well established. There was no loss of time in most of these instances. It was believed that the epidemic was caused by materials used in the compounding of an accelerator. These were afterwards changed and substances believed to be injurious eliminated. The incidence then subsided. Compounds used included zinc oxide, sulphur, lithophone, red oxide, carbon black, clay, coal tar, liquid asphalt, mineral rubber and trimene base. During the year three inspections were made of this plant in addition to special investigations in the dermatitis case. In this establishment 826 men and 533 women were employed. No minors under sixteen years of age worked in this plant. First aid rooms for persons injured or taken ill on the premises were provided, with a graduate nurse in charge. Sanitary conditions were good. These included adequate toilet and washing facilities, good ventilation for the removal of fumes or dust, and pure drinking water. Machinery was properly safeguarded and general compliance with labor laws prevailed.

Classified by industry, plants in which dermatitis cases were investigated are as follows:

<i>Industries</i>	<i>Cases</i>	<i>Industries</i>	<i>Cases</i>
Leather	17	Machine shops	8
Lithoprinting	16	Tanneries	7
Textile	15	Automobile repair shop	
Rubber	12	including welding	5
Building	11	Dyehouse	4
Shoe industry	8	Electrical appliances	3
	Miscellaneous	17	

Other employments in which these cases appeared included concerns manufacturing hosiery, confectionery, soap, gelatine, hats, fur, paper, cutlery, wood heels, drugs, oleomargarine and oil cloth.

Irritants used in these places are classified as follows: chemicals, 61; dust, 20; oils, 19; acids, 7; chrome, 4; rubber compound, 3; mineral, 3; miscellaneous, 6.

Orders were issued in a few places where it appeared that exhaust sys-



tems did not function adequately in removing dust and fumes to the outside air. In these cases recommendations made by inspectors for the protection of employees met with good coöperation.

*Industrial Anthrax:* Seven of these occupational diseases were reported and the work places of each employee given careful inspection. Six were men; one, a woman. Three of these were in tanneries; two in leather-finishing establishments, one in a brush factory and one was a truckman who was engaged in hauling wool to the mills in a textile city. In the last named case the employee developed a sore arm and the case was diagnosed as anthrax by the attending physician. Incapacity was of short duration. None of these cases was fatal. The incidence of anthrax poisoning in tanneries is held at a low rate, largely through the effort of plant physicians. Good physical supervision of employees is maintained under their assistance, and prompt treatment is furnished in case of lacerations or other slight injuries.

In one of these cases an employee who worked for one of the tanning concerns was employed for nearly a year and his duties were to unbale the dry, salted skins and put them into a liquid soak for disinfection. Practically all of the skins used by this concern came from South America or Northern China and were not certified as free from anthrax. Prompt attention was given the case at the onset and the employee was immediately removed to the hospital, where the disease was diagnosed as anthrax and the usual treatment given in such cases applied successfully.

Two other cases occurred in another tannery engaged in this business for many years. In this place employees work in the beam house and their duties include bringing dry, salted skins from the rough-stock room and putting them into the liquid soak. All cases of this industrial disease occurred among the employees in the rough-stock room. These cleared up quickly and there was little time lost on the part of the employee. The room in which these cases occurred is provided with a concrete floor and the walls are whitewashed frequently. Disinfection solution is used regularly on the floor. There is a washroom and shower bath provided for the employees. Gloves are also furnished without expense to the workmen. Daily visit is made by the plant physician and examination of employees is made when it appears to be advisable.

Contact with hair and bristles, arising out of her employment in a brush-manufacturing establishment, resulted in another case of anthrax to a woman who had been employed here for ten months. Diagnosis of her disease was made by a family physician and quick recovery followed prompt treatment on his part. This firm claimed that materials handled by this employee were sterilized by the dealer from whom they were purchased. They were advised by the inspector to boil them again in the shop before employees are permitted to handle them.

*Carbon Monoxide Poisoning:* There were six of these cases investigated, one of which was fatal. While engaged in repairing an automobile truck in a small garage, the caretaker of a golf club was found unconscious and died shortly afterwards. The cause of death was attributed to the inhalation of carbon monoxide gas.

Employed for nineteen years as a cable splicer for a telephone company, one of these workmen descended into a manhole located in a busy traffic center. After removing the manhole cover, it was learned that he waited fifteen minutes so that there would be adequate ventilation in this place before he went down into it. The manhole proved to be very gaseous, and he became dizzy and collapsed, passing quickly into unconsciousness. He was incapacitated for employment for several weeks and suffered much pain and distress, due chiefly to agitated heart action and severe headache. The hole in which this man worked was at the edge of the car track in the middle of the street and it was said that the continuous traffic of trucks and electric cars on the surface had loosened the joints of the gas

mains, causing the manholes to fill up with gaseous matter. Gas pipes in the vicinity of this place were old installation, and joints sealed by inserting cork covered with lead, causing lead to separate and permitting the escape of gas through the porous cork. To protect the health of employees working under these conditions, the telephone company provided a blower apparatus consisting of a small gasoline engine and a long rubber hose from 10 feet to 12 feet in length and 6 inches in width through which a strong current of fresh air may be constantly carried down into the manhole.

An acetylene welder, employed in a shipbuilding yard, while working with a torch in a partly enclosed tank, sustained carbon monoxide gas poisoning. Here he was found unconscious by a fellow employee. Artificial respiration was induced through the efforts of other workmen, and later he responded to the treatment prescribed by the plant physician.

In the other cases, employees were made ill by escaping gas from unpiped salamanders used for drying purposes in building construction.

*Chrome Poisoning:* There were 27 cases of chrome poisoning investigated. All were men, 16 occurring in tanneries; 7 in textile establishments. The others occurred in a printing concern, foundry and rubber mill.

In tanneries, some of these cases were due to employees handling animal skins chemically treated. These were soaked in a liquid bath containing chrome dyestuffs, sulphonated oil and caustic soda. In other places the process used in treating animal skins was a vegetable tannage containing a small amount of chrome alum. It is usual in these places to furnish these employees with rubber gloves, oiled sleeves and aprons as a means of protection.

In the textile establishment, men employed in operating dye kettles and transporting dye materials from kettles to truck and to various rooms in the mill are exposed to the danger of chrome poisoning. The most effective agency to prevent this disease among such workmen is the covering of the hands or the wearing of gloves.

Other cases included a rash on both hands among men engaged in the dyeing of cloth containing a solution of 3% chrome and other dyestuffs. Workrooms in these establishments were found to be well ventilated, with large windows and monitors on the roof. Washing facilities were ample and excellent. Provisions were made for first aid treatment of persons injured or taken ill. In the wool-scouring room, a mixture of oil and potash is used and this was found to be an exciting cause in other injuries of this type.

*Inhalation of Dust:* Five occupational diseases, due to the inhalation of dust, were investigated. These were all men. Establishments visited in this connection included automobile factory, electrotyping, metal refining, coal sheds and wood-working plant. The exciting cause in each case was as follows: Dust generated in sandpapering copper bar; in grinding copper oxide; in sandpapering automobile bumper and while working on mahogany wood. In another case an employee inhaled dust from coal pulverized and mixed with other ingredients, which gave off fine dusts in handling it. Failure to use respirators or suitable masks provided for their use was largely responsible for the occupational diseases in most of these.

*Gas and Fume Poisoning:* There were 25 cases investigated. Five of these diseases of occupation concerned employees who worked at spraying lacquer in wood-working and metal-manufacturing establishments. In these places exhaust equipment for the removal of fumes was installed. Suitable apparatus was provided for this purpose, including booths and fans. Inspectors found that employees failed to adjust the work to that part of the booth where the exhaust would withdraw the fumes effectively



from the work room. Suggestions were made on these lines to improve the operating process, and coöperation was received from the workmen.

Five employees in the building trades were overcome by fumes from defective salamanders. These were used for the drying of concrete slabs for roof construction. There was prompt compliance with orders issued by the department, requiring the apparatus used to be piped in accordance with the regulations requiring that smoke and gaseous matter be conveyed to the outer air.

*Mercurial Poisoning:* Four of these cases occurred in an establishment engaged in the construction of gas-heated refrigeration machinery. These machines were provided with a gas burner by which metallic mercury was warmed and vaporized in a closed vacuum system. In this the mercury vapor ascends and then crosses along a coil to a central tube where it withdraws water vapor from a circulating system. The process is finished when the water returns to the cooling tank and the mercury to its original container. Employees were required to pour mercury from a flask into a machine receptacle three or four times each week. Sodium hydroxide and nitric acid were used occasionally. There was exposure to mercury at many points. Much of it was noted on the floor and on parts of the machinery. Suggestions were made to diminish exposure of workmen, and coöperation was received. These included closing the leaking points where the vapor escaped.

Diagnosis of the disease by physicians showed mucous membrane of throat and mouth swollen, discolored and ulcerated areas accompanied by general malaise, increased temperature and loss of appetite and sleep. Dental difficulties were included in this history. Paper drinking cups were provided for the employees, also suitable washing facilities. Expert medical supervision and treatment were available for them.

*Cyanide Poisoning:* Five of these cases were investigated. These employees worked in connection with cyanide solution used in silver, brass and cadmium plating. Small pieces of work are placed in a wire basket and immersed in this solution. Workmen handled these with bare hands. Rubber gloves are usually provided for the employees to use in the work process. Incapacity for work was limited to a few days in each case. Frequent inspections of plants in this trade are made and precautions used to prevent diseases of occupation. Orders issued by the department to improve upon existing methods of ventilation, and other devices for the control of vapors, were complied with promptly.

Other industrial diseases investigated by the inspectors included cases of illness through inhaling acid, paint and cement fumes and from contact with aniline oil.

#### PREVENTION OF WORK INJURIES

Regular inspection of work places is the most efficient means for preventing injuries in employment. This system maintains interest in safeguarding exposure to industrial hazards and educates the employee in exercising due care in his occupation. Investigating injuries is an important factor in this work. From this source comes information necessary to accomplish practical results. It is an educational process. The inspector becomes acquainted with the danger zones in industry and the experience equips him with expert knowledge in dealing with this work. The contributory factors in which injuries occurred are examined carefully and methods are usually suggested to prevent similar experiences. Well-organized safety committees in the large industrial plants have become efficient in this activity. Inspectors have coöperated with these agencies and stimulated interest in their efforts. Under this system uniform treatment with causation of industrial injuries is maintained. The safeguarding of machinery at the point of operation is improved. Good results follow this practice in controlling operating dangers on saws, planers, calender rolls and punch press machinery. During the year investigation was made in 1,428 accident cases. Efficient coöperation has



been received from the department of industrial accidents in this connection. The statutory requirements provided for the availability of its reported injuries to the department of labor and industries has been regularly complied with. Section 19, chapter 152 of the General Laws, requires as follows:

Section 19: Every employer shall hereafter keep a record of all injuries, fatal or otherwise, received by his employees in the course of their employment. Within forty-eight hours, not counting Sundays and legal holidays, after the occurrence of an injury, a written report thereof shall be made to the department on blanks to be procured from it. Upon the termination of the disability of the injured employee, the employer shall make a supplemental report upon blanks to be procured from it. If the disability extends beyond a period of sixty days, the employer shall report to the department at the end of such period that the injured employee is still disabled, and upon the termination of the disability shall file a final supplemental report as provided above.

The said reports shall contain the name and nature of the business of the employer, the situation of the establishment, the name, age, sex, and occupation of the injured employee, and shall state the date and hour of any accident causing the injury, the nature and cause of the injury, and other information required by the department.

Employers refusing or neglecting to make the report required by this section shall be punished by a fine of not more than fifty dollars.

Copies of reports of injuries filed by the employers with the department and statistics and data compiled therefrom shall be kept available by it, and shall be furnished on request to the department of labor and industries for its own use."

During the year the division made constant use of the valuable information obtainable from this source. Following this plan, reports of injuries filed by employers with the department of industrial accidents were carefully examined by a clerk in the employ of the division of industrial safety. Accidents, classified as follows, were made the basis for investigation: Fatal accidents; permanent disabling injuries; injuries to minors under sixteen years of age; injuries to minors between sixteen and eighteen years of age if the information indicates that the minors are employed at processes prohibited by law; occupational diseases; accidents occurring in the building trade line; accidents occurring in establishments where a high rate of frequency prevailed.

The cases selected for investigation are then assigned to an inspector who examines machinery and the work place. He interviews the officials representing the employer and the employee and files this information on a questionnaire blank which includes the occupation of the employer, the name of the machine and the address of its manufacturer. Space is provided for report of devices used, and a description of the work done in the plant to prevent accidents must be given. If safety committee is in active operation or special efforts are made to prevent accidents, record must be made of these facts. Description of facilities for first aid treatment to persons injured or taken ill upon the premises is required.

Plant experience with industrial injuries during the year is secured. Practical use is made of the valuable information secured under these circumstances. It may include correspondence with manufacturers of machinery, suggesting means to prevent similar accidents. Orders may be issued by the department, requiring better control of machinery parts or the removal of objects from aisles and passageways for the prevention of non-machinery accidents.

Again, this plan keeps the division well informed on the nature of injuries taking place in the industries of the state and indicates the establishments which stand in need of frequent inspection. This knowledge is

utilized and experience obtained is stressed by the inspection force for the prevention of accidents or reduction in the degree of severity. It directs attention to the fact that two-thirds of the permanent disabling injuries are attributable to machinery. About 80% of these occur at the point of operation, leaving a small number of such accidents occasioned by contact with belts, screws, set screws, flywheels and other movable parts. More than one-half of these occurred on metal and wood-working machinery. Accidents were investigated in 1203 industrial establishments and 251 buildings in the course of alteration or erection—1226 concerning men and 228 women. Analysis of accident cases investigated in the industrial establishments indicates the nature of injuries sustained as follows:

Abrasions, contusions and bruises	195
Burns and scalds	63
Concussions	15
Cuts, punctures, lacerations	217
Dislocations	4
Fractures and breaks	103
Sprains and strains	92
Amputation and loss of use	410
Electric shocks	6
All others	56

These included 76 fatal cases, of which 32 were due to burns and scalds; 7 concussions; 1 laceration; 18 fractures and breaks; 1 sprain and strain; 4 electric shocks; all others, 13.

Establishments visited, in which accidents occurred, included mercantiles, 75; transportation, 6; garages, 3; laundries, 17; printing, 26; foundries, 34; metal trades, 149; rubber, 26; paper, 34; shoes, 59; textile, 271; wood-working, 114; tanneries, 63; miscellaneous mechanical establishments, including workshops, 109; miscellaneous manufacturing establishments, 149. Of these accident cases, 727 were due to contact with machinery; 316 from other conditions existing in the plants. In 144 establishments, safety committees were organized and giving active service. First aid rooms were provided in 542; medical chests in 342. In 168 cases, outside medical treatment was included. This means additional care for employee by physicians or in hospitals. In 101 cases, injuries were due to slippery floors, 85 of these being in textile mills. Safeguards to prevent injury were provided in 755 cases. Some of these included trap doors and self-closing hatches in openings of hoistways, hatchways and well holes in factory buildings.

In nearly all of these cases inspectors coöperated with the plant management in an effort to prevent a recurrence of similar injuries. This included conferences with safety committees and safety engineers, at which the causes of accidents were made known and action taken to prevent the same conditions arising again.

Cleaning machinery while in motion continues to be a source of many serious injuries, and lack of care on and about elevators responsible for a number of fatal accidents. In this work employees and management were interviewed and the danger of unsafe practices made plain.

Reference to types of establishments and kinds of machinery concerned with the work of accident investigation indicates the contact made with industry for this purpose. These include mercantile establishments in which injuries occur to employees in connection with electric meat grinders, coffee grinders, wrapping machines, slicing machines and other devices in preparing food products for consumer. Painful lacerations of fingers, necessitating amputation, was the type of injury concerned in these cases.

In laundries the injuries resulted principally from contact with ironing machines, body ironers, flat work ironers, mangles, extractors and wash-



ing machines; in the printing trade, platen presses, binding presses, linotypes, flat bed cylinder presses and bookbinding machinery; in the paper industry on drier rolls, supercalender rolls, paper-cutting and paper-folding machinery; and in the rubber trade on calender rolls, automatic presses, clicking machines, compound mixers, automatic heel cutters and stripping machines. Others occurred on shoe trade machinery, including stapling, grading, feather edging, sole-cutting, counter-cutting, sole-stamping, innersole tacking, eyeletting, stitching, leveling, rolling, heel-shaving, edge trimming machines; in tanneries on machinery used for splitting hides, dehairing, shaving, brushing and finishing; in textile mills, carding machinery, spinning frames, knitting machinery, quilling or twisters, garnetting, weaving, pickers and combers. Employers in wood-working establishments sustained injuries while operating jointers, matchers, moulders, planers, edgers, sanding machines, band saws, circular, swing and jig or scroll saws; and in the metal trades on metal-cutting machinery, including wheels, boring machines, drill presses, drop hammers, forging hammers, lathes, screw machines, milling and gear-cutting machines, moulding, polishers and buffers, stamping and trimming machines, embossing presses, punch and riveting presses and reamers.

Injuries to operators of food products machines, including dough mixers, bottling machines, packing and wrapping machines, cookers and ovens, mixing machines and kettles and milling and grinding machines were among the cases investigated. The problem of accidents arising from non-mechanical causes was given prominent place in this work.

No reduction in these can be shown to have taken place. Most often they occur through failure of the individual employee to exercise due care. They are nearly all traceable to simple circumstances. Analysis of the accidents investigated discloses some of these causes. They included lifting heavy material, falling from truck, being struck by automobile, falling down stairs, tripping over boxes in aisles, falling into elevator well, stumbling over obstruction in passageways, stepping on nails, falling through belt holes, tripping over board on floor. Serious back injuries were sustained in some of these occurrences which resulted in extended periods of incapacity for work. Others caused inguinal hernia, necessitating surgical operation and hospital treatment.

The use of mechanical devices would prevent only a small number of these injuries. Such means are usually impracticable in the handling of objects, which constitutes the leading cause of industrial injuries in this state. Accidents from this cause are far in excess of those arising from other circumstances. This is clearly shown in the following data taken from Table No. 10 of the annual report of the department of industrial accidents for the year ending June 30, 1927:

CAUSES	Totals	Deaths	Permanent Total Disability	Permanent Partial Disability	Temporary Total Disability
Handling of objects . . . . .	31.5	9.5	11.8	13.7	32.0
Falls of persons . . . . .	15.5	21.1	29.4	3.7	15.6
Machinery . . . . .	13.3	14.8	11.8	63.5	12.3
Hand tools . . . . .	8.3	1.9	—	7.5	8.3
Stepping on or striking against objects.	7.6	1.3	11.8	1.1	7.8
Vehicles . . . . .	6.4	21.4	17.6	2.9	6.4
Miscellaneous causes . . . . .	5.7	8.5	—	3.0	5.7
Falling objects not handled by employee.	5.6	6.0	—	2.6	5.7
Explosions, electricity, etc. . . . .	4.1	10.7	5.9	1.2	4.2
Occupational diseases . . . . .	1.3	3.2	5.9	6.0	1.3
Animals . . . . .	.7	1.6	5.9	2.0	.7
	100.	100.	100.	100.	100.

The group in which the highest number of accidents occurred was in the "handling of objects," with 31.5%, followed by "falls of persons," with 15.5%.

*Handling of Objects:* Accidents of this group include such occurrences as objects dropped upon another person by a fellow worker; being caught



between objects; injuries due to something falling from a load or pile of material; strain in handling (the cause of nearly all industrial hernia injuries); and violent contact with sharp or rough objects. In the investigation of accidents of this kind, inspectors urged upon employers and employees the need of exercising care in storing material; handling tools and keeping them in good repair; piling objects in trucks; moving objects about the workroom and avoiding unsafe practices.

*Falls to Persons:* Special effort was made to prevent accidents due to falls. Many injuries arising from this cause were investigated and in nearly all such cases the accidents could have been prevented. Slipping on the floor is the cause of many painful injuries to employees and frequently attended with a prolonged period of incapacity for work. These deal with a cause which may be controlled. Practical means of preventing such accidents include the maintenance of permanent passageways and gangways of even surfaces, keeping them clear and in good repair and free from nails, tools or obstructions over which persons may stumble and fall. Inspections made of the industrial establishments during the year included special attention to floor conditions. Orders were issued when the floor appeared dangerous for use. Firms were advised to post notices warning employees of the slipping danger when floors were washed. Accidents due to slippery floors continue to be numerous. These are usually preventable. Women suffer largely from these experiences. Oil-soaked spots beneath and around machinery, drippings from leaking humidifiers and shafting hangers, nails projecting above the floor, and other simple causes such as these, frequently cause serious injuries to employees. Brief reference is made herewith to some of these cases:

An employee, tending a wet cotton slasher, reached over the draft roll to repair a broken end, and, slipping on the wet floor, lost his balance, falling against the machine. The right hand and arm went into the roll up as far as the elbow, severely crushing it.

In a wood-working establishment, an employee, standing near a buzz planer, slipped on the floor, falling against the machine, his hand striking the revolving knife, causing the loss of the little finger of his left hand.

An injured spine resulted from a slippery floor when a woman weaver slipped and fell in a textile establishment. Floors were found to be in good repair in this case, and it was believed that bad heels on her shoes caused the fall.

While emptying sausage meat from a mixer into a small truck on the floor, an employee slipped, his left arm entering an opening in front of the machine, sustaining an amputation of the index and middle fingers of the left hand. Floor conditions were responsible for this serious accident.

In pushing a warp twisting stand ahead of him, an employee in the weave room of a large mill encountered a greasy place in the floor, which caused him to slip, and, in trying to maintain his balance, strained the muscles of his back. This accident resulted in a lengthy hospital experience and incapacitated him for an extended period.

In a bleachery establishment, an employee was cleaning the trough on a starch machine, standing on the step about eight inches high. Stepping down into the wet starch on the floor, he fell, sustaining a fracture of ribs on the right side. In correcting this danger to workmen, the management had floor drains installed to carry off the water from the floor around the machines. Employees were provided with wooden-soled shoes made especially for non-slipping purposes, and foreman required to maintain constant supervision of floor conditions.

An oil-soaked floor in a weaving room was the cause of an employee falling against the edge of a beam and sustaining an injury which resulted in a fractured rib. An extended period of incapacity followed this accident and complete recovery was not made for several months.

Walking around the end of a speeder in the card room where she was employed, a young woman sustained a fall, striking her head on the edge of the frame and lacerating the scalp. In trying to save herself, her arm came in contact with a rapidly moving belt, causing a friction burn on the right forearm. Wearing old shoes fitted with rubber heels, she slipped upon an oil-soaked place in the floor.

Examples of preventable accidents are given to indicate the character of injuries arising from defective floor conditions.

*Eye Injuries:* Investigation was made in 42 cases of eye injuries to 40 men and two women. Classified by industry, these occurred as follows: mercantile, 1; mechanical, 3; building trades, 2; textile establishments, 5; shoe manufacturing, 3; metal trades, 14; rubber industry, 2; paper industry, 1; foundries, 3; tanneries, 3; miscellaneous, 5.

The following is a classification of the 42 cases by nature of the injury: loss of sight, 7; cuts, punctures and laceration, 6; foreign body in eye, 12; burns and scalds, 3; irritation, 13; loss of eye, 1.

Prolific sources of eye injuries include granite and emery dust, wire puncture, chemical irritation, flying chips of metal and mineral materials and escaping fumes. Most of these were caused through the lodging of a foreign body in the eye. An investigation of cases occurring in connection with machinery showed that in 27 places proper safeguards for the protection of eyes were in use and 21 safety committees in operation. First aid rooms were provided in 18 and medical chest in 11. Careful investigation was made of these eye accidents and the need of using devices for the prevention of injury urged upon the employees. Glass shields, under which the work could be properly done, and the wearing of goggles by the employees, were means required for this purpose. Prevention of eye accidents is frequently difficult because of the nature of the work. Flying nails, breaking machinery parts, lodgment of foreign particles and materials in the eye often result in causing the loss of sight.

In a large watch manufacturing plant an employee suffered the loss of sight when a piece of a broken main spring penetrated his right eye.

Another attempted to make repairs on the grate of the boiler firebox, and while using a hammer and chisel for this purpose caused a small piece of steel to fly and lodge in his left eye, destroying the sight.

While employed in floor construction work, a carpenter sustained loss of sight in his left eye when it was penetrated by a flying nail.

Non-machinery accidents of this character have not been reduced and they form a substantial portion of injuries occurring in the industrial establishments of this state. To deal with the specific cause in the most of these, inspection of floors in the industrial establishments was stressed during the year. Orders were issued to concerns when it was found that there was carelessness in permitting floor hazards to exist, which were readily complied with. The information secured in the investigation of such injuries was made available to the plant management and in many cases to safety committees and safety engineers. Constant effort in preventing these accidents means educating management and employees in maintaining good housekeeping in the plant and exercising a reasonable degree of care in the course of employment.

*Building Operations:* In the building trades, 251 accidents (all to men) were investigated. In building construction work, 117 of these occurred; in painting, 69; roofing, 15; alteration of buildings, 50. The following is a classification by nature of injury:—fatal, 25; burns and scalds, 1; concussions, 2; fractures and breaks, 12; electric shock, 1; all other, 9; amputation and loss of use of member, 6; abrasions, contusions and bruises, 59; burns, scalds and concussions, 8; cuts, punctures, lacerations and dislocations, 20; fractures, breaks, sprains and strains, 125; all other, 8.

Causation of these accidents and classification of industry are as follows:

*Building:* staging collapsed, 37; faulty scaffolding, 15; falls through openings, 9; falling materials, 8; floor collapsing, 9.

*Painting:* staging collapsed, 31; faulty scaffolding, 12; lack of rail on staging, 2; gutter collapsed, 3; ladder rung broke, 3.

*Roofing:* staging collapsed, 7; faulty scaffolding, 6.

*Alteration of buildings:* staging collapsed, 19; faulty scaffolding, 7; fell through opening, 1; lack of rail on staging, 1; falling material, 2; collapsing gutter, 1.

In 15 cases men employed on working platforms, which complied with all the requirements of the rules for building operations, sustained injuries through falls. Investigation in these cases determined the fact that employees lost their balance while attempting to do their work in a precarious position.

First aid and medical treatment was provided for employees in these operations as follows:

Building construction . . . . .	89
Painting . . . . .	43
Roofing . . . . .	13
Alterations of buildings . . . . .	34

#### INJURIES TO EMPLOYED CHILDREN

Analysis was made of fatal and permanent partial disability injuries to children in the fourteen to eighteen-year group as reported to the department of industrial accidents for the year ending June 30, 1927. This constituted the most recent information available for this purpose. Special investigation was made by inspectors when it appeared that employment took place in proximity to hazardous machinery or in violation of other provisions of law. In some instances this included interviews with management and school superintendents in relation to compliance with certificating requirements.

There was a total of 2,897 injuries to children under eighteen years of age. These constituted 4.6% of all tabulatable injuries for the year, and, classified by ages, are as follows:

Age	Number	Boys	Girls
14 (and under)	140	111	29
15	357	273	84
16	1015	769	246
17	1385	1078	307

There were two fatal injuries to children under sixteen years of age. Both were messenger boys in the employ of telegraph companies.

In one of these cases, a boy fifteen years and eleven months old entered an office building for the purpose of delivering a message. Riding up on a freight elevator, he was caught between the third and fourth floors of the building and fatally crushed.

While operating his bicycle on the public street, in delivering a mes-



sage, another boy fifteen years of age was struck by a heavy automobile truck and killed instantly.

Permanent partial disability injuries in the same age group, classified by age and sex, are given herewith:

<i>Age</i>	<i>Number</i>	<i>Boys</i>	<i>Girls</i>
14	2	1	1
15	6	6	0
16	32	26	6
17	25	19	6

All of these accidents were investigated.

There was 1 fatal injury to a minor sixteen years of age and three to children seventeen years of age. One of the latter was a young woman clerk seventeen years of age who was employed in the office of the overseer of the spinning department in one of the large textile mills of the state. Shortly after 7 o'clock in the morning she was going up on the elevator in the care of the regular operator, and when the third floor was reached, where her office was located, the operator raised the heavy fire door, which was closed during the night, and as the girl stepped on to the floor landing, the door fell on her head, crushing her to death. This door weighed approximately 300 pounds and was held up by  $\frac{1}{2}$  inch cable attached to counterweights. The cable pulled out of the clamp that held it to the counterweight, causing the door to drop.

Standing on a direct motor running frame connecting an air hose into an air line, a boy seventeen years of age was shocked to death as soon as he touched the metal pipe. Examination afterwards by electricians showed that the ground wire over the motor of the spinning frame was broken, making a perfect circuit when the boy touched the air pipe while standing on the motor frame.

In oiling and greasing an automobile at a service station, a boy seventeen years of age sustained a fatal injury when he slipped from a stand 3 feet high and fell on a vertical grease gun. The screw thread part of the mechanism, which projects several inches above the cap, entered the body of this boy, and internal hemorrhages caused his death.

*Permanent partial injuries to children 14 and 15 years of age:* There were 10 such injuries in this age group: nine were boys and one a girl. Injuries by industry were as follows:

<i>Industry</i>	<i>Nature of Injury</i>		
Textile	4	Loss of phalange	4
Metal	3	Loss of more than one phalange	1
Shoe	1	Loss of one finger	3
Wood-working	1	Loss of two fingers	1
Farm	1	Loss of left hand	1

Causation of injury in these cases was found to be as follows:

Operating picking machine	1	Corner-cutting machine	1
Corn sheller	1	Common hand screw press	1
Squaring press	1	Caught finger in loom	1
Cleaning machine while in motion	3	Fell and caught hand in gear under loom	1

*Injuries to children between 16 and 18 years of age:* There were 57 of this age group: 45 boys and 12 girls. Injuries by industry were as follows:

Metal	13	Building trades	2
Textile	10	Wood-working	2
Shoe and leather	5	Laundry	1
Candy manufacturing	3	Mercantile	1
Paper	3	Rubber	1
Printing	2	Miscellaneous manufacturing	14

Nature of injury in these cases was as follows:

Loss of one phalange	25	Loss of two fingers at second joint	1
Loss of two phalanges	4	Loss of three fingers at first joint	2
Loss of thumb	1	Loss of three fingers on hand	1
Loss of one finger	5	Loss of use of one finger	5
Loss of two fingers	1	Loss of use of left hand	2
Loss of three fingers	1	Loss of eye	1
Loss of four fingers	1	Loss of sight of one eye	1
Loss of two fingers at first joint	6		

Important factors in the causation of injury in these cases were the following:

Pressed treadle while hand was in machine press; caught finger in grading machine while taking out soles with stick—finger was caught by end of fixture and crushed; caught hand in gears of automatic cutting machine; caught hand in roll of sanding machine; chip flew in the eye; oiling gears on spooling machine; hand caught in caramel sizer after removing safeguard; hand caught in circular saw and in stamping machine; finger caught in meat grinder; operating moulding machine; picking waste from machine while in motion; operating forming machine; cleaning machine while in motion; embossing machine; coal conveyor and power press.

#### PUBLIC WORKS

Inspections were made of operations in the construction of public works. These concerned the employment of laborers, workmen and mechanics by contractors or sub-contractors engaged in this line of business for public work departments of cities and towns in the commonwealth. In most of these cases conferences held with the proper officials resulted in prompt compliance with the requirements of the statutes. The employment of laborers, workmen and mechanics under these circumstances is restricted to not more than eight hours in one day or more than forty-eight hours in a week except in cases of extraordinary emergency, which the law defines to be danger to property, life, public health.

Citizens must be given preference in employment and mechanics and teamsters paid the rate of wages prevailing in the same locality.

These operations include the construction of water and sewage systems, the erection of schoolhouses, county buildings, the construction and additions to state institutions and the construction of public highways. During the year 166 contracts for the building of new roads were awarded by the department of public works at bid prices which totaled \$8,824,825.74. The maximum number of laborers, workmen and mechanics employed during the construction season of 1928 was approximately 5,000. These operations included the straightening and widening of highways, the construction of new roadbeds and the building of walls and bridges. For this work the use of powerful machinery for excavation purposes, mixing apparatus to prepare materials and other mechanism, including hoisting and similar machinery was necessary.

Regular supervision was given to these undertakings by the inspectors, and coöperation secured in complying with the law.

It was necessary to prosecute only in a few instances. During the year

there were 68 complaints to the department in connection with employment on public works. In 30 of these it was alleged that veterans and citizens were denied the privilege of preference in employment. When the law was made known in this connection, employers willingly gave preference as required by statute.

There were 21 complaints for alleged violation of the eight-hour law. Nearly all of these were concerned with the highway, sewer and water departments in cities and towns. It was found in most of them that danger to property, life, public safety and public health made it necessary to work more than eight hours a day and forty-eight a week. Some were concerned with the construction of bridges under circumstances where there was danger to property and life. Others were involved with dangers arising from traffic conditions.

In 16 complaints it was contended that mechanics were not paid the prevailing rate of wages. In 13 of these, employers readily paid new rates without formal determination by the department when it was shown that they were paying less than the prevailing rate. Under these circumstances cause for complaint was removed and further action was unnecessary.

#### *Laborers' Vacations*

In 1914 the legislature adopted chapter 217 of the acts of that year, which provided that all persons classified as laborers or doing the work of laborers and "regularly employed" by cities and towns for more than one year should be granted a vacation of not less than two weeks for each year of their employment without loss of pay. Another provision of this act required that it should be submitted to the voters of each city or town for their acceptance or rejection. This was done in many of the cities and towns of the commonwealth at the state election in the fall of 1914, and the system of providing vacations for laborers was established.

In the year 1915 the legislature adopted chapter 60 of the acts of that year, which required that—"In any city in which a majority of the voters had accepted the provisions of chapter 217 of the acts of the year 1914, could by vote of the city council, approved by the mayor, direct the heads of the executive department to grant a vacation of two weeks without loss of pay to any person 'regularly employed' who was qualified as a common laborer, skilled laborer, mechanic or craftsman in the labor service."

These enactments led to confusion and raised the question as to whether it was necessary to have the city council determine that a vacation should be granted if the city had previously accepted chapter 217 of the acts of 1914. To qualify for this vacation, it was provided in chapter 217 of the acts of 1914 that laborers must be "regularly employed" by cities and towns for more than one year. The interpretation of the term "regularly employed" was another source of confusion in the cities and towns and this caused later enactments by the legislature, who defined that such "person shall be deemed to be 'regularly employed' within the meaning of this section, if he has actually worked for the city or town within thirty-two weeks in the aggregate during the preceding calendar year."

Finally, in 1927, the legislature adopted chapter 131 which amended section 111 of chapter 41 of the General Laws, in part as follows:

"In any town which accepted chapter 217 of the acts of 1914, all persons classified as laborers or doing the work of laborers, 'regularly employed', by such town, shall be granted a vacation of not less than two weeks during each year of their employment, without loss of pay.\*\*\*\*\*A person shall be deemed to be 'regularly employed', within the meaning of this section, if he has actually worked for the city or town for thirty-two weeks in the aggregate during the preceding calendar year. The department of labor and industries shall enforce this section and shall have all necessary powers therefor."



When the law authorizing this department to enforce the provisions in connection with laborers' vacations became effective, conferences were held with city and town authorities. These grew out of complaints from laborers who were not granted vacations as provided for by statute. Employees had qualified for the vacation through having worked thirty-two weeks in the aggregate during the preceding calendar year. The annual appropriation for department maintenance was exhausted and the men discharged.

An opinion was secured on certain provisions of the vacation law from the attorney-general of the commonwealth. This indicated that a laborer who worked thirty-two weeks in the aggregate in the preceding calendar year and who was discharged at some period in the ensuing year was not entitled to a vacation. This law was also construed to mean that since no penalty was provided by statute for its violation, a petition for mandamus could be successfully maintained by the person entitled to a vacation in the event that his rights under this chapter were denied or abridged. The coöperation of cities and towns was secured in the granting of vacations of laborers who had legally qualified for them.

#### WEEKLY PAYMENT LAW

Failure to comply with the requirements of the weekly payment law continues to furnish the division with an amount of work voluminous in detail. Complaints to police authorities and court officials result in advising employees to bring action through the criminal process. Labor organizations and other agencies direct many individuals each year to follow this procedure. This means a personal interview with the person aggrieved and an examination of all the facts in each case. Forms are used in the preliminary record and the necessary information entered. These are provided with questions designed to establish the fact of jurisdiction and meet the statutory requirements for prosecution in court. When these conditions have been met, correspondence is entered upon with the employer, and if the amount due is not promptly paid, personal demand is made by a special investigator from the division.

Refusal or failure to comply with the provisions of the statute is then followed by action in court. Here the rights of the employee are maintained without cost of such action to him. This system proved successful to hundreds of men and women during the year. In this period 1600 complaints were made the basis for investigation. Out of this number it was necessary to take court action in only 585 cases. The total amount paid by the employers after complaint was filed reached the sum of \$43,711.61.

The amounts involved were usually small and this made it unprofitable for the employee to secure legal assistance. To the unskilled laborer this problem of failing to secure wages earned is often a serious one. Defrauding him of his wages imposes a grave injury. It affects the well-being of his family and brings hardship in the home. Many of these cases are found among groups of people where there is lack of ability to speak English in a practical manner. This is true to a large degree among employees of sub-contractors in the building trades, especially in the excavating work in connection with cellar and foundation. Lack of proper business training and inability to figure costs accurately in many cases explains why these employers fail, not only in paying wages weekly, but in paying in full the amount earned by the employees. Much time is occupied by the clerks in the determination of conflicting claims arising from disputes over the rates of wages. Both parties are frequently brought into conference and the legal requirements of the weekly payment law made known to them. This procedure usually leads to compliance with the statute, and the employee is paid what he earned. If agreement cannot be reached by this method, employees are advised to seek remedy in the civil court when it is apparent that the case is not within the provisions of the criminal law.

In many cases employees affected by the trustee process or concerned

with the assignment of wages call at the office for information. These procedures are explained and the requirements of the statute in this connection made known. Many such cases arise from relations with concerns engaged in the practice of selling goods on instalments. Employees enter into these transactions and through lack of employment fail in making payments according to the agreement. Many concerns now follow the rule of discharging employees involved in such cases when attempt is made to enforce payment through these processes. In some cases the division rendered assistance to those in finding other employment for them. Through the branch offices this work is now done in the large industrial districts of the state. Complainants come regularly for this assistance. Upon the division forms information is entered by the clerk, giving all the facts in each case. Correspondence is entered into with the employer. If there is dispute between the parties, they are brought together and agreement usually follows. When court action becomes necessary, an inspector usually conducts the prosecution for the department. To these offices attorneys send their clients to whom small sums of money are due. Public welfare organizations and other agencies advise many to take advantage of this service, and useful aid is given to employees who need it.

#### COUNSEL'S OFFICE

In the course of the twelve months ending November 30, 1928, this office has entered 897 prosecutions in the various courts of the commonwealth. The findings of the courts in those cases have been as follows: guilty, 677; nol prossed, 4; nolo, 20; dismissed, 129; not guilty, 67; total, 897.

#### CHARACTER OF OFFENCE

<i>Minors:</i>	Employed under 14 years of age . . . . .	5
	"    without certificates . . . . .	41
	"    in prohibited trades or on dangerous machinery . . . . .	16
	Illegal public exhibition . . . . .	1
<i>Time notices:</i>		
	Not posted . . . . .	23
	Employment at time other than stated in notice . . . . .	105
<i>Overtime employment:</i>		
	Women and minors . . . . .	44
	On public works . . . . .	3
<i>Miscellaneous:</i>		
	Preference to citizens . . . . .	9
	Non-payment of wages . . . . .	585
	Illegal advertising . . . . .	1
	Unguarded machinery . . . . .	13
	Rules in building operations . . . . .	16
	Rules in painting business . . . . .	2
	Day of rest in seven . . . . .	3
	Hindering inspector . . . . .	3
	Absence of free egress . . . . .	1
	Health and sanitation . . . . .	15
	Improper lighting . . . . .	3
	Miscellaneous violations . . . . .	6

It will be noted that a large majority of our prosecutions had to do with the enforcement of the statute providing for the weekly payment of wages. The larger number of dismissals were wage cases, as several courts dismiss those cases as a matter of course when the wages are paid. Some cases have been placed on file on pleas of nolo contendere; some have been nol prossed, sometimes on the recommendation of this office, sometimes on motion of the court. Those were cases where the violations were either unintentional or unknown to the party complained of. It should be borne in mind that the disposition of criminal prosecutions is exclusively in the discretion of the courts.



## REPORT OF THE BOARD OF CONCILIATION AND ARBITRATION

EDWARD FISHER, *Chairman*, HERBERT P. WASGATT, SAMUEL ROSS

On December 1, 1927, there were pending four joint applications for arbitration; during the year 114 joint applications were filed, making a total of 118. Of these, 11 cases were settled without arbitration, abandoned or withdrawn; decisions were rendered in 99 cases and eight cases are now pending. In addition, one petition for a normality certificate was filed.

### CONCILIATION

The activities of the Board during the year in the work of conciliation have brought its members into contact with both employers and employees in many lines of industry. As a result the Board and its agent have had the privilege, even when no labor controversy existed, of discussing with such employers and employees matters relating to employment and other industrial conditions more or less affecting the same. The Board has found that the maintenance of such contact is one of the effective means of enlightening both employers and employees relative to its duties and activities. The value of such relationship thereby established has been forcibly demonstrated in many cases, especially where controversies have later arisen.

Most of the labor controversies occurring during the year were amicably adjusted without any cessation of work and when there was such cessation, with few exceptions, it was for a short duration only. Such controversies have arisen in many instances by reason of the expiration of working agreements, one or both of the parties thereto desiring changes in the terms and provisions thereof. In such cases, however, the parties after conferring together, and in many instances with the aid and assistance of the Board, reached an understanding and continued their relationship under the terms of a new agreement. The Board has also, as in the past, used its good offices to arrange other conferences with the parties where a labor controversy existed or was threatened.

The most serious controversy was the strike of textile operatives in New Bedford, involving many thousands of employees and extending over a period of twenty-five weeks, a statement of the facts concerning which is given in this report.

Another important controversy was the strike, on January 19, of employees, about 6,000 in number, in the shoe industry in Haverhill in protest against the award of the local board of arbitration, which board had been established under an agreement between the manufacturers, members of the Haverhill Shoe Manufacturers Association, and their employees. Efforts were made by representatives of both parties and others to adjust these differences, but not being successful the Board on January 25 visited Haverhill and conferred separately with the representatives of the manufacturers and of the employees. During such conferences the Board obtained a statement from both parties of their respective contentions. The Board also stated that before taking further steps the parties would first be asked to enter a joint conference. The representative of the employees expressed a willingness to do so. Upon interviewing the representatives of the employers regarding their attending such joint conference, the Board was informed that effort was being made and a further conference of the parties on the following day was expected. Under these circumstances the Board took no further action pending such conference. Such conference was held and it resulted in the parties ultimately coming to an agreement whereby the employees returned to work.

Another controversy was that of the ironworkers in Boston and vicinity. On or about April 1 the agreement between various crafts in the building trades in Boston and vicinity, affiliated with the Building Trades Coun-



cil, and their employers, members of the Building Trades Employers Association, expired. It appeared that representatives of these crafts had been in conference with their employers previous to April 1 and up to May 23, during which period there was no cessation of work. No agreement having been reached at that time, the ironworkers went on strike, demanding among other things an increase in wages of 20 per cent. In all there were about 800 members of this craft, but not all were employed at that time. It was evident that if no settlement was reached a general cessation of work in the building trades was likely to result. This was especially serious as there were several large buildings under construction. Therefore, in the performance of its duties the Board extended an invitation to the parties to attend a joint conference on June 7. The employees were not represented at this conference, claiming failure to receive proper notice, and as a result a further conference was called for June 11. At that time both parties were represented and the Board was informed of their respective contentions and it was further informed by representatives of the employees that adjustments had been made with some employers on a compromise basis of 10 per cent increase in wages. It appeared that there were, generally speaking, three classifications of these employees; one known as the structural steel workers, who did work aloft; another known as the reinforced workers, and the third as the ornamental- or light-iron workers. The work of the structural ironworkers was generally recognized as the most hazardous, nevertheless they all received the same rate of wages and in their demand the same increase was sought for all. At this conference the Board was also informed that the representatives of the parties were to have a further conference the following day; therefore the Board adjourned its conference with the understanding that if some adjustment were not reached a further conference would be held with the Board on the 14th. Although no adjustment was reached the following day, nevertheless the parties arranged for further conferences and so informed the Board. Under these circumstances the Board withheld action awaiting the result of such conferences. Later the Board was informed that although the parties had not entered into any written agreements, yet an understanding was reached whereby the employees returned to work on a compromise basis of 10 per cent increase, and thereby what threatened to be a very serious controversy in the building trades was averted.

*Textile Operatives, New Bedford.* On Monday, April 16, a strike of the operatives in the employ of twenty-six corporations, members of the New Bedford Cotton Manufacturers Association, manufacturing what is termed fine cotton goods, occurred in protest against a general reduction in wages of 10 per cent, notices of which reduction had been posted on April 9 in the various mills, to be effective April 16. Most of these companies operated more than one mill in this city and in all fifty-four mills were involved. The following are copies of these notices:

#### ANNOUNCEMENT

Operating costs in the cotton mills of New England have undergone such changes that New Bedford manufacturers are confronted with a situation which is not only abnormal but extremely critical.

#### NOTICE

Due to wage reductions in other localities favoring competitors, this corporation is obliged to announce a wage reduction of 10 per cent in all departments, effective MONDAY, APRIL 16th, 1928.

April 9, 1928.

#### LOWER WAGES IN OTHER LOCALITIES

In many of the cotton mills of New England wage reductions have become effective. The operatives in New Bedford cotton

mills now receive wages that are much higher than what is paid for the same class of work in competing mills elsewhere. Some of these mills can operate 54 hours per week. In addition, there are no legal restrictions as to night work for female operatives, which is an advantage in getting out orders for quick deliveries.

#### NEW BEDFORD HANDICAPPED

It should be obvious that New Bedford manufacturers, paying the old wage-scale, limited to a 48-hour week and restricted as to night work, must be doing business under a serious handicap.

#### COMPETITION

New Bedford cotton mills have been struggling under these unfair conditions for a long time. It is now essential that they get their production costs nearer those of their competitors if they are to continue in operation.

#### RELUCTANT TO REDUCE WAGES

When, in other sections of New England, cotton manufacturers reduced wages, New Bedford cotton mills refrained from taking similar action. Various plans were considered which it was hoped might relieve the situation without affecting the earnings of the operatives. Unfortunately none of these solves the problem.

Owing to the competitive conditions which exist, New Bedford mills are forced to make a reduction in wages of 10 per cent, effective Monday, April 16th, 1928, and have posted notices accordingly in the mills named below.

It is hoped that this will relieve the situation sufficiently to enable local corporations to take orders which would otherwise go to competitors.

(Names of 26 companies attached)

Approximately 28,000 employees were affected although not all were employed at the time of the strike. Of these employees about 6,000 were active members of trade unions. However, it was claimed by the unions that this membership was materially increased during the strike. These unions, which had long been established, were seven in number, as follows: weavers; loomfixers; carders and ring spinners; mule spinners; ring twisters and finishers; slasher tenders; warp twisters. All these unions, except the mule spinners, were at the time of the strike affiliated with the American Federation of Textile Operatives, the mule spinners being affiliated with the Federated Textile Unions. After the strike had been in progress for a short time all seven became members of the United Textile Workers of America, affiliated with the American Federation of Labor.

These unions have a central body which is composed of four representatives from each union. These twenty-eight representatives constitute what is known as the New Bedford Textile Council. The Council held its regular monthly meeting on the evening of April 9, the date on which the notices of reduction were posted. The Council recorded its opposition to the reduction and ordered that the question of its acceptance or rejection be voted upon by the various locals on the following Thursday.

Some time about noon on Thursday, April 12, His Honor, Mayor Ashley, as the result of a conference with the business men and with the representatives of the manufacturers, conveyed the information to the representatives of the employees that the manufacturers were prepared to postpone the reduction for one week if the unions would refrain from taking any vote. He was informed, however, that as all preparations had been made to take the vote at that time it was too late for the consideration of such a request.

It was suggested, however, by representatives of the employees that



they might refrain from counting the ballots even after the vote was taken if the employers would agree to postponing the taking effect of the reduction for at least one week. However, later in the day they were informed that such arrangement was not acceptable to the employers. Further efforts were also made without success to secure such postponement with a continuation of work during that period.

The vote in favor of the strike was overwhelming. No notice of the proposed reduction was given other than through the posting of the notices and during the week of April 9 no joint conference of the parties was sought or none held. Very few employees reported for work on Monday, April 16, or during the remainder of that week. This resulted in the mills being closed.

In the meantime the Board had tendered its services to both parties and through its members an agent was in constant communication with their representatives, each party having appointed a committee for this purpose. It was apparent from the start that both parties to the controversy were firm in their respective positions and that unless some change in the attitude of one or both should occur, the strike would be of long duration. It also appeared from the start that the sentiment in New Bedford, as evidenced by the press and otherwise, was overwhelmingly opposed to the manufacturers making this reduction.

On July 5 the Board called a conference of the two committees at the Municipal Building, New Bedford. At this conference both committees were in full attendance and the entire matter of this controversy was reviewed and discussed at length, including the fact that the employers had posted notice of the opening of the mills on Monday, July 9. Both parties, however, were very firm in their respective positions; on the part of the employees, that no settlement whatever could be reached without a restoration of the 10 per cent cut; and on the part of the employers, that no settlement would be considered without the employees returning to work under the reduction. The Board then discussed with the representatives of the parties the question of submitting their differences to arbitration. One of the employee members asked the Board to outline what the customary procedure was in arbitrating before this Board and a detailed explanation was given, the following being a brief summary: that arbitration could be had only with the consent of both parties; that the parties in controversy had the right to choose a board of their own or could accept the State Board; that in case the State Board was selected, a written application should be signed, stating the terms and issues upon which the arbitration was to proceed, the specific issues being for the parties themselves to determine. It was also explained that the policy of the Board was that the employees should return to work, as far as business conditions warranted, under the same conditions, including piece and day prices, existing at the time the controversy arose.

The Board then conferred with the two committees apart, finally stating to each committee separately that it was prepared to make the following recommendation: "that the opening of the mills on Monday be deferred pending the submission by both committees to their respective organizations the question of arbitrating existing differences." The manufacturers' committee stated that they were prepared to accept the recommendation of the Board and submit the proposition to the full membership of the manufacturers association for acceptance or rejection. The Board informed them that it would not expect the recommendation to be effective unless accepted by both parties. The committee of the employees, after some consideration, declined to accept the recommendation of the Board as it did not deem it advisable to do so at that time; consequently the matter was dropped.

On Monday, July 9, practically no employees returned to work and this condition continued although the mills remained open. Picketing was maintained and some disorder arose, resulting in arrests and, in one instance, necessitating the services of the militia.



After the attempted reopening of the mills had been in progress for the third week, the Board called a further conference of the two committees at the Municipal Building, New Bedford, on Friday, July 27. At that time the Board was again emphatically informed by both committees that their respective positions were unchanged and that no settlement could be made except as stated at the previous conference. The Board then took up again with the parties the question of a settlement through referring the entire matter to a board of their own choosing or the State Board. Again the details of such reference were discussed so that both committees had full and comprehensive knowledge of the procedure in the event that the State Board was selected for that purpose. The Board then conferred with the respective committees apart and finally drew up and submitted to the parties the following recommendation:

The Board of Conciliation and Arbitration recommends that the controversy now existing between the employees and employers in the textile industry in New Bedford be submitted to a disinterested tribunal, to be appointed in a manner satisfactory to both parties, or submitted to the State Board of Conciliation and Arbitration for settlement. The details of such submission, unless agreed to by the respective parties, shall be determined by said tribunal or by the State Board as the case may be.

The Board requests that the respective parties take the matter under advisement and submit an answer to the Board in writing on or before Friday, August 3, 1928.

The Board intended originally to ask the parties to submit their answers by Tuesday, July 31, but as the employees' committee stated that it would probably be necessary to submit the matter to the various locals for action, the time was extended at their request until Friday, August 3. At this conference the Board was emphatic in its statement to both committees that in its opinion there was no justification whatever for the continuance of this controversy so long as a fair and honorable means and opportunity were afforded the parties through the medium of which a settlement could be reached; that the recommendation of the Board afforded such a medium and that to continue this controversy was destructive of the industry and injurious to the city of New Bedford and the welfare of the commonwealth.

The parties were also informed that, unless some settlement was made or an agreement to arbitrate reached, the Board would immediately undertake an investigation as called for by the statute, and the Board explained in detail the purpose of and the procedure in making an investigation; that as an initial step in the investigation a public hearing would be held in New Bedford and the parties would be afforded an opportunity under oath to state their respective positions.

On Friday, August 3, the Board received the following replies from the employers and the employees, who declined to accept its recommendation.

August 2, 1928.

Mr. Edward Fisher, Chairman,  
Massachusetts State Board of Labor and Industries,  
State House, Boston, Mass.

Dear Sir:

I am instructed to advise you that a referendum of all locals has been taken on the recommendation submitted to us by your Board, i.e., "the determination of present controversy by a disinterested board."

The result of that referendum was an almost unanimous rejection. The vote was of course by secret ballot.

Respectfully yours,

Wm. E. G. Batty,  
Secretary.

August 3, 1928.

To the Honorable the Board of  
Conciliation and Arbitration.

Gentlemen:

The matter of referring the differences now existing between the employers and the employees in the textile industry in New Bedford, to a disinterested tribunal to be appointed in a manner satisfactory to both parties, or submitting the same to the State Board of Conciliation and Arbitration for settlement, was brought before a very largely attended meeting of the representatives of the New Bedford Cotton Manufacturers Association. The members were of the opinion that it was a matter of common knowledge that the employees were unwilling to submit their differences to arbitration as recommended by the Board of Conciliation and Arbitration, and therefore after full consideration it was unanimously voted that the New Bedford Cotton Manufacturers Association respectfully decline at this time to adopt your recommendation.

We take this occasion of expressing to you our appreciation of your good offices and to say that we welcome the interest of the State Board of Conciliation and Arbitration in the industrial affairs of this community.

Very cordially yours,

John Sullivan,

President and for the New Bedford Cotton Manufacturers Association.

The Board immediately informed both parties of its intention to commence an investigation and gave notice that a hearing would be held at the Municipal Building in New Bedford on Wednesday, August 8. In opening the hearing the Board outlined its duties in making this investigation; that where a labor controversy of this nature arises and no settlement is agreed upon and the parties refuse to submit the matter in dispute to arbitration, the law provides that the Board "shall investigate the cause of such controversy and ascertain which of the parties thereto is mainly responsible or blameworthy for the existence or continuance of the same, and shall, unless a settlement of the controversy is reached, make and publish a report finding such cause and assigning such responsibility or blame."

The parties presented, both in a general way and in detail, statistical and other evidence to bear out their respective contentions. In substance, the manufacturers' position was that business was very dull at the time of the reduction; that there was an over-production or under-consumption as one might view it, and that business at the time of this hearing was even duller than when the reduction was made. They also presented evidence showing the trend of wages in New Bedford over a period of sixteen years, indicating increases and decreases, which with the reduction of 10 per cent now in contention would leave the wage rates 31.4 per cent above the level of the increase in the cost of living. Evidence was presented as to the financial condition of the industry both before and since the war, reference to which will be made later. The contention was also made that the New Bedford manufacturers were paying higher wage

rates than their competitors, both within and without the commonwealth, and specific reference was made to the fact that in January last the textile manufacturers in Fall River, including those making both coarse and fine goods, after a conference with their employees, had put into effect a 10 per cent reduction and that "it was inevitable that New Bedford would be obliged to follow suit." This fact alone, they contended, would justify the reduction in New Bedford. In the present instance, however, the manufacturers in New Bedford, to their credit, did not immediately follow the course of the Fall River manufacturers. Later testimony was introduced to show that it was the custom, when in either city a decrease or an increase in wage rates was put into effect in this industry, that the mills in the other city soon followed suit. A list of 62 New England textile mills was presented, which had ceased operations on account of failure, liquidation or the removal, in whole or in part, of their machinery to the South, or were closed, either permanently or temporarily. It appeared, however, that very few of these mills were in competition with the New Bedford manufacturers and it was later stated that this evidence was introduced only for the purpose of showing the general trend in the textile industry.

The representatives of the employees took the position that no cut in wages was necessary and that it was in no way a remedy to meet the economic situation; that higher wages were being paid even now in Fall River and in other competitive centers, both within and without the commonwealth. Among others the following eight specific objections were made:

1. The wage cut was not dictated by necessity.
2. The wage cut is neither a cure nor a remedy for conditions.
3. Local mills have fared as well as or better than any similar group during the depression, irrespective of wage cuts.
4. Local mills have lower wage rates than most of their competitors.
5. There are greater differences in wages and rates among New Bedford mills than between New Bedford and its competitors outside. Internal competition of this sort cannot be affected by a general wage cut.
6. The family income in New Bedford is so low—the average wage being \$19 a week before the cut—that rock-bottom has been reached and no further reductions are possible.
7. General over-expansion and bad management, especially on the merchandising end, are chiefly responsible for present conditions.
8. Co-operation based on confidence, developed by frequent and regular conferences on technical and human practices, is the surest guarantee of stability and profitable operation.

They also claimed that what they termed many unofficial reductions, especially in the weaving department, had been made through changes of process, increased work, reduction in piece rates, etc. They demanded not only that the 10 per cent reduction be restored, but that the unions should be recognized and an agreement made with them whereby in the future all grievances should be taken up with their accredited representatives. They accompanied these demands with an offer to co-operate with the manufacturers in making a study of and securing a readjustment of existing manufacturing methods. They asserted that the strike and all responsibility therefor rested on the shoulders of the manufacturers by reason of their method of posting and attempting to put into effect the wage cut, with only a week's notice and without conferring or attempting to confer with their employees. However, it should be noted that testimony was given later by one of the representatives of the employees to



the effect that it had been customary during the past years for the employers to give notice in this manner and in some instances for approximately the same period.

The employees also offered a survey of the financial condition of some of the mills with their comments thereon. It was stated by both parties to the controversy that in this section of the country at least the textile industry as a whole, including the manufacture of fine cotton goods, is not in a prosperous condition or, as one of the representatives of the employees stated at the hearing: "The textile industry is sick undoubtedly and has been for a long time, but a 10 per cent cut is not going to cure that sickness."

Before the hearing was closed an opportunity was afforded for any other interested parties to present evidence. The only person to take advantage was a representative of the Textile Mills Committee, he stating that he represented the New Bedford Textile Workers Union, an organization affiliated with this committee. Among other matters he presented four specific demands:

1. That the 10 per cent wage reduction be restored.
2. That a 20 per cent increase be granted upon the former wage schedule.
3. A protest against any speed-up system.
4. A forty-hour week.

The first step towards ascertaining the fundamental cause of this depression naturally lies with the manufacturers, but where, as has been often stated by both manufacturers and employees as well as others, the depression is due to over-production or under-consumption, resulting in "cut-throat selling" by manufacturers at prices below a profit and even below cost, and that where mills have been operated full time and in some instances both night and day, certainly the remedy does not lie with one group of manufacturers or even the manufacturers in one state. It means co-operative action by all, or at least all in one section of the country, to ascertain and apply the remedy. In this, of course, the manufacturers must ultimately have the co-operation and support of their employees, but what form of relationship should be established between them for this purpose is, generally speaking, for the parties themselves to determine.

While the Board has sought and to a limited extent secured information from competitive centers, both within and without the commonwealth, relative to the rate of wages, both time and piece, paid employees, their earnings, amount of production, hours of labor, etc., yet it must be apparent to anyone at all conversant with the textile industry that to attempt to make an accurate and detailed comparison of production or manufacturing costs between competitive mills, both within and without the commonwealth, would require not only a corps of expert assistants but also the assent of the manufacturers themselves to an extended examination of their records, methods of manufacture, character of goods produced and hours of employment, etc. It is not to be expected that the manufacturers would assent to this, and if they did it would take months to secure this information. In fact, such information was requested from competitive manufacturers in this state and was in some instances refused. In other instances, through the courtesy of the manufacturers, valuable information was secured.

It might be pointed out that an additional obstacle was presented by reason of the fact that, as one of the representatives of the employees stated at the hearing, it is difficult to make a comparison of the rates paid in the weaving department with competitors in other textile centers, especially because there is such a wide difference in the rates paid by the various mills involved in this controversy. That there were variations was not disputed by the manufacturers, but they contended in the main such variations were justified.

Generally speaking, the mills in this country engaged in the manufacture of fine cotton goods operate approximately 162,500 looms. Of these approximately 98,500 are in Massachusetts, distributed as follows: New Bedford, 57,000; Fall River, 21,500; elsewhere in Massachusetts, 20,000. In other New England states, chiefly Rhode Island and Connecticut, are approximately 51,000 looms; the balance are in southern states. The manufacturers in other New England states are permitted to employ female help longer hours than in Massachusetts, but from the information received by the Board not in all instances do they do so. Formerly it was generally recognized that New Bedford controlled the majority of the fine-goods product made in this country, the percentage having been quoted at one time as high as 86 per cent. This percentage has been steadily decreasing until at present the mills in New Bedford, it is estimated, produce not exceeding 38 per cent of this product.

The statistical data on file in this Department, based upon the monthly reports of manufacturers in the textile industry for the years 1925, 1926 and 1927, indicate that the average weekly earnings of the operatives in the Fall River mills were less than in the New Bedford mills, and the data for the first three months of 1928, after the 10 per cent reduction had gone into effect in Fall River, indicate even a greater difference, but it is to be borne in mind that these data from Fall River include both the coarse- and the fine-goods mills. However, the data secured by the Board, which were from the fine-goods mills only in Fall River, in some instances indicate that the earnings of the employees in Fall River were less and in other instances approximately the same as in New Bedford.

As already stated, at the hearing the manufacturers contended that in these competitive centers the mills had the advantage of lower wage rates and, in some instances at least, greater production and longer hours with a resulting lower production cost. The employees, however, made the statement that the wage rates in some of these centers were at least as high and in some instances higher than in New Bedford and quoted figures, more particularly with reference to the weavers and loomfixers, to substantiate their contention, this information being obtained, generally speaking, from present or former employees or their representatives. It must be apparent that the evidence of both the manufacturers and the employees is lacking in sufficient scope, definiteness and detail upon which to base a sound determination of the question of production costs, and with regret the Board further states that the general information received through its own efforts is not sufficiently full and complete, even with that obtained from the manufacturers and employees, to warrant any definite finding upon this issue. Apparently, with a few exceptions, there has not been recently any general or extended reduction in wages in these mill centers, although in a few instances mills have increased the weekly hours of labor.

Again taking up the situation in Massachusetts, outside of Fall River there was in 1927 and 1928, previous to the reduction in New Bedford, no general reduction in wages by competitors in this line of industry. In a few instances, however, reductions in wages were made and apparently in a few other instances a readjustment of wages and conditions, permitting a lower production cost. There is also some evidence that under these conditions the earnings of the employees average approximately the same as those of the operatives in New Bedford, although the contention was made that the production costs were less. Again, this evidence, as in the case of evidence secured from without the commonwealth, was not sufficient in volume or detail to afford any material assistance to the Board in coming to a conclusion as to comparative conditions. It is to be noted that at the time the reduction was made in New Bedford some reductions were also made elsewhere, notably in Taunton.

As regards the financial condition of these mills, the following is a brief statement, taking the most important items from evidence as testified to by both parties. The capitalization of the mills in controversy is \$73,-



401,900. Previous to the late war, going back to 1908 and including 1916, the mills were successful, having paid in the nine years dividends averaging  $7\frac{1}{2}$  per cent. During the war period and immediately following (that is, from 1917 to 1922, inclusive) the mills were very prosperous, in line with most industries, and in those years dividends, including stock dividends, were paid at the average rate of 17.3 per cent. Beginning in 1923, however, there was a decided reaction and for the years 1923 to 1927, inclusive, the dividends paid averaged a little short of 5 per cent. In the last two years figures are available which show that the excess of quick assets over liabilities in twenty-five mills, as of December 31, 1925, was \$37,764,293. As of December 31, 1927, in the same mills the excess of quick assets over liabilities was \$27,248,898, showing a shrinkage of \$10,515,395 in two years. One of the statements exhibited by the representatives of the employees in their evidence as to twelve companies, as of the year 1926, was that the total of the twelve companies showed a deficit of \$376,247; in 1927 the same companies showed a profit of \$1,855,988, a two-year net profit of a little less than \$1,500,000, an average of \$750,000 per year for the two years. The capital stock of these twelve companies was \$35,823,900, as per a table published in the New Bedford Sunday Standard under date of Sunday, April 8, 1928. This would show an average profit per year for two years of 2.1 per cent on the capital stock, making no allowance whatever for possible earnings on any surplus or undivided profits. Moreover, if 1927 is taken by itself as a profitable year, it will show but little better than 5 per cent on these twelve companies, while practically the balance of New Bedford mills, or at least mills totaling a capital investment of \$34,369,800, paid no dividends. Attention should also be called to the fact that mills with a capital investment of \$20,000,000 have paid no dividends for from one and one-half to four and one-quarter years. Market quotations of stock in twenty-one mills in controversy, as available through publication by the New Bedford Sunday Standard of April 8, based on a common-stock par value of \$100, showed an average of \$84 per share. Only six of the twenty-two mills were quoted at above par and six were quoted under \$50 per share. Eight of these twenty-two mills have preferred stock, which showed an average quotation of \$62.33 per share on a par value of \$100 per share.

At the close of the investigation hearing the Board announced that before submitting its report placing the blame for the strike or its continuance, it would make at least one further effort to adjust the matter through conferences of the parties. In pursuance thereof the Board held a conference on September 25 with the committees of the employers and the employees in the Municipal Building, New Bedford; the Board having first, with the assent of both parties, extended an invitation to the Citizens Mediation Committee of New Bedford to sit with the Board. This committee was established during the early period of the strike, consisting of Charles Mitchell, attorney-at-law, chairman; George R. Cherry, president of Cherry & Co. (cloaks and suits); Rev. Hugh A. Gallagher, curate of St. James Church; Albert H. Doyle, dry-goods merchant, Samuel E. Bentley, attorney-at-law, and Arthur J. Durfee, secretary-treasurer of the Star (department) Store. At this conference the matters in controversy, including the adoption of a so-called extension or specification system, were gone over in detail. As a result the Board and the Citizens Mediation Committee submitted the following joint recommendation:

The Board of Conciliation and Arbitration, sitting jointly with the Citizens Mediation Committee, heard today at length the respective conference committees of the Manufacturers Association and the Textile Council, and having given the matter of the strike controversy full and careful consideration, they unanimously make the following recommendation:

The conflict between the parties as developed at the conference is upon the wage cut. Having in mind the condition of the in-



dustry as well as the proper desire to keep wages at the highest level possible, it is recommended that there be a five per cent cut instead of the ten per cent cut imposed by the manufacturers.

This recommendation has already been submitted to the conference committee of the manufacturers and they have approved it and have agreed to recommend its acceptance by the Manufacturers Association.

In view of the attitude of the conference committee of the Textile Council, the Board suggests that this recommendation be submitted by them to the Textile Council for action.

Edward Fisher  
Samuel Ross  
Herbert P. Wasgatt

Board of Conciliation and Arbitration.

Charles Mitchell  
George R. Cherry  
Rev. Hugh A. Gallagher

Albert H. Doyle  
Samuel E. Bentley  
Arthur J. Durfee

Citizens Mediation Committee.

This recommendation was accepted by the employers. Upon the same being submitted to the seven locals for action, four voted against and three in favor of acceptance. An agitation then arose for a further reference of this matter to these locals, and after due consideration and with the assurance given in writing by the employers "that in case any general change in wages is contemplated, a thirty-day notice will be given," the New Bedford Textile Council voted unanimously to re-submit the recommendation to the locals with its own recommendation that it be accepted. On October 6 all seven of the locals voted in favor of accepting the recommendation. On the following Monday the mills reopened, such employees as business conditions permitted returning to work. Thus this very severe and long-drawn-out labor controversy ended.

As a settlement was reached no report placing the responsibility for the controversy was made by the Board, the statutes providing that such report is to be made "unless a settlement of the controversy is reached." The Board at this time wishes to express its appreciation for the very efficient aid and co-operation given by the Citizens Mediation Committee and acknowledges that such aid and co-operation were important factors in securing a settlement of the strike. While it was not possible to reach a settlement which would carry with it an understanding or agreement as to the future relations between the employers and the employees, except as to the giving of the notice above referred to, nevertheless the Board trusts and believes that both employers and employees, profiting by the experiences of this serious controversy, have a more complete and fuller realization and appreciation of their respective rights, obligations and responsibilities toward each other and the public as well.

#### ARBITRATION

The Board rendered decisions on 99 applications. Of these four were pending from last year; the balance, 95, being applications filed in the current year.

#### NORMALITY

A petition for normality certificate was filed by the Old Colony Foundry Company of Bridgewater, and after a hearing and an investigation a certificate was issued.

LIST OF INDUSTRIES AFFECTED AND PRINCIPAL DIFFERENCES IN  
CONCILIATION AND ARBITRATION CASES

*Conciliation*

*Industries Affected:* Building, catering, cigar, coal, milk, paper, rubber, shoe, textile, transportation, upholstery.

*Principal Differences:* Wages, working conditions.

*Arbitration*

*Industry Affected:* Shoe.

*Issues Arbitrated:* Wages, discharge.

# REPORT OF THE MINIMUM WAGE COMMISSION

EDWARD FISHER, *Chairman*, HERBERT P. WASGATT, SAMUEL ROSS,  
ETHEL M. JOHNSON, *Acting Director*.

## OUTLINE OF FUNCTIONS

The duties of the minimum wage commission under the law comprise the following functions: Investigating the wages of women employees in occupations when there is reason to believe that the wages of a substantial number are below the requirements of healthful living; establishing wage boards to recommend minimum rates of wages for women and minors; entering wage decrees based on the recommendations of the boards; inspecting to determine compliance with the decrees; and publishing the results of their findings.

An account of the work conducted during the year along these lines is given in the summary following.

## SUMMARY OF WORK IN 1928

### *Inspections*

As in the preceding year, the major part of the minimum wage work conducted during 1928 has been devoted to inspection to determine compliance with the wage decrees. Practically all of the field work now carried on is confined to inspections, as there are wage decrees in effect in twenty different occupations.

Inspection has been carried on during the year under twelve decrees. In the case of eight decrees the inspection was initiated and completed, before the close of the fiscal year. In the case of the other decrees, the work represents continuing work started in 1926 or 1927 or work that was initiated during the present year and is still in progress at the close of the year. Inspection on complaint or in connection with other work was made in the case of one or more establishments under seven other decrees.

With the program of inspection work it has not been possible to undertake any new wage studies during the year as the basis for establishing further wage boards. Investigation on complaint has been made in the case of individual establishments engaged in the manufacture of artificial flowers and wreaths and in mail advertising service.

### *Wage Boards*

The two wage boards authorized in 1927 have been established. These are the boards for the electrical equipment and supplies and the boot and shoe cut stock and findings occupations. The board for electrical equipment and supplies completed its work and submitted a report of its determinations in the spring. The other board was started in the late fall. It is still in session at the close of the present year.

### *Publications*

The minimum wage publications issued are the reprints from the annual report for the department summarizing the work of the division of minimum wage for the year and the leaflets outlining the provisions of the decrees entered. These include for 1928, the reprint from the annual report and the statement and decree for the electrical equipment and supplies occupation.

The commission has discontinued the publication of the bulletins giving the results of the wage investigations and inspections. This material is available in mimeographed form for consultation in the division office.

### *Wage Decrees*

A decree establishing a minimum rate of wages for women and girls employed in establishments manufacturing electrical equipment and sup-



plies was entered by the commission on April 5, 1928, effective June 1st of that year. This action was taken following a public hearing, March 27, 1928, on the determinations of the wage board formed for the occupation.

### *Advertisement of Non-Compliance*

During the year the commission advertised one firm under the candy decree and six firms under the jewelry and related lines occupation decree. The inspection work was not completed under the other decrees in time to permit publication, in the cases where such action appeared necessary, before the close of the year.

### *Conferences*

As in previous years, a number of conferences have been held by the commission and by the assistant commissioner with the employers regarding the adjustment of cases of non-compliance in their establishments. Opportunity for such conferences is offered in every instance before publication. The assistant commissioner has interviewed the candidates for the wage boards established during the year and has addressed a number of meetings to explain the minimum wage law and the work of the wage boards.

## WAGE BOARD WORK

### *Electrical Equipment and Supplies Board*

A wage board of fifteen members was established by the commission to recommend a minimum rate of wages for women and girls employed in the manufacture of electrical equipment and supplies. The board held eight meetings, the first on January 13, 1928, the last on March 5th, when a report signed by fourteen of the members was submitted. The board estimated the cost of living for a self-supporting woman in the occupation as \$14 a week. They recommended that \$14 be established as the minimum rate for a woman of ordinary ability and that a special rate of \$12.00 be fixed for those with less than six months' experience. The commission after provisionally approving this report and holding a public hearing as provided by law, entered a decree based on the determinations of the board effective June 1, 1928.

### *Boot and Shoe Cut Stock and Findings Board*

As a result of the investigation of the wages of women employed in the boot and shoe cut stock and findings occupation made in 1924, a wage board was established for the occupation. This board is composed of fifteen members, six representatives of employers in the occupation, six representatives of the women employees and three representatives of the public, one of whom was designated chairman. The board has held 5 meetings, the first on October 22, 1928, and is still in session at the close of the period covered by this report.

## INSPECTION WORK

The inspections conducted during the year come under the following decrees:—bread and bakery, candy, canning and preserving, corset, electrical equipment and supplies, laundry, men's furnishings, millinery, muslin underwear, office cleaners, retail stores and women's clothing. In the case of the electrical equipment and supplies occupation decree, which became effective during the year, a complete initial inspection was made. The inspections under the retail stores and office building cleaners decrees represented completion of work begun in a previous year. The work under the candy and laundry decrees is still in progress. In the case of the other decrees mentioned the work was started and completed during the year. This is aside from the reinspections preliminary to the publication

of non-compliances, the major part of which is carried over to the following year.

In addition to the regular inspection work, inspection on complaint or in connection with other work was made in the case of one or more establishments under each of the following decrees:—paper box, stationery goods and envelopes, knit goods, men's clothing and raincoats, brush, druggists' preparations and toys and games.

In the course of the year, wage records for 31,641 women and girls were secured from 1,363 establishments. This is exclusive of the reinspection visits made in the effort to adjust the cases of non-compliance investigated at the beginning of the year or those discovered in connection with the regular inspection work.

### *Electrical Equipment and Supplies Decree*

The decree for the electrical equipment and supplies occupation, providing a minimum rate of \$14 a week for women of ordinary ability and \$12 for beginners, became effective June 1, 1928. Inspection to determine compliance was started that month and completed in the following November. Wage records were secured for 5,434 women and girls in 74 establishments. More than one-half of these women were employed on a piece work basis.

Of the 2,099 women on time rates, 13.6 per cent had scheduled rates below \$12 a week as compared with 22.7 per cent at the time of the preliminary investigation; 41.3 per cent had rates below \$14 a week as compared with 59 per cent at the previous investigation. (Table I)

TABLE I.

### *Weekly Rates of Women Employed in the Electrical Equipment and Supplies Occupation in Massachusetts. Comparative Table (Cumulative)*

#### Investigation of 25 establishments—March through May, 1925

	NUMBER AND PER CENT OF WORKERS WITH RATES													Total
	Under \$9	Under \$10	Under \$11	Under \$12	Under \$13	Under \$14	Under \$15	Under \$16	Under \$17	Under \$18	Under \$19	Under \$20	\$20 and Over	
Number	41	74	92	149	277	387	475	547	577	602	621	632	24	656
Per cent	6.3	11.3	14.0	22.7	42.2	59.0	72.4	83.3	88.0	91.8	94.7	96.3	3.7	100.

#### Inspection of 70 Establishments—June through November, 1928

	NUMBER AND PER CENT OF WORKERS WITH RATES													Total
	Under \$9	Under \$10	Under \$11	Under \$12	Under \$13	Under \$14	Under \$15	Under \$16	Under \$17	Under \$18	Under \$19	Under \$20	\$20 and Over	
Number	160	202	233	286	726	867	1,196	1,382	1,583	1,661	1,755	1,905	194	2,099
Per cent	7.6	9.6	11.1	13.6	34.6	41.3	57.0	65.8	75.4	79.1	83.6	90.8	9.2	100.

TABLE II.

*Comparison of Weekly Rates of Women Employed in the Manufacture of Electrical Equipment and Supplies in Massachusetts in 16 of the Same Establishments Included in the Preliminary Investigation and in the Subsequent Inspection. (Cumulative)*

(March through May, 1925 and June through November, 1928.)

YEAR	NUMBER AND PER CENT OF WOMEN WITH RATES													Total
	Under \$9	Under \$10	Under \$11	Under \$12	Under \$13	Under \$14	Under \$15	Under \$16	Under \$17	Under \$18	Under \$19	Under \$20	\$20 and Over	
1925														
Investigation Prior to decree														
Number .	-	8	15	62	142	211	257	297	322	341	358	368	24	392
Per cent .	-	2.0	3.8	15.8	36.2	53.8	65.6	75.8	82.1	87.0	91.3	93.9	6.1	100.
1928														
Inspection, First after decree														
Number .	-	1	4	11	188	210	341	395	425	430	437	524	51	575
Per cent .	-	.2	.7	1.9	32.7	36.5	59.3	68.7	73.9	74.8	76.0	91.1	8.9	100.

Decree effective June 1, 1928.

Provides minimum rate of \$14 for women with 6 months' experience, 3 months in a given factory; \$12 for all others.

The initial inspection is intended to help in securing adjustment of non-compliances. It shows the wage situation at the time of inspection, and before all the adjustments possible have been made.

Comparison of weekly rates of women in the same 16 firms included in both the preliminary investigation and the subsequent inspection (Table II) shows that at the time of the investigation 15.8 per cent of the women had rates below \$12 a week, and 53.8 per cent had rates below \$14 a week; while at the inspection immediately following the date the decree became effective, 1.9 per cent had rates below \$12 and 36.5 per cent had rates below \$14 a week.

It should be remembered that the initial inspection shows the wage situation directly after a decree has gone into operation, and that some of the wage adjustments are made as a result of the inspection although the major part are made on or before the date the decree goes into effect.

There was compliance at the time of inspection in 4,958 cases. In 49 establishments, representing 1,914 women employees, all necessary adjustments had been made prior to the inspection so that these establishments showed full compliance at the time of the inspection. There were found 476 cases of non-compliance in 25 establishments. Full adjustment was made in 16 of these establishments. There are pending at the close of the year 351 cases in nine establishments. (Table VII)

#### *Women's Clothing and Office Building Cleaners Decrees*

As comparatively few establishments were inspected under the women's clothing decree in 1926—seven, it seemed advisable to make a complete inspection in 1928. The work was initiated in December, 1927, and completed in October 1928, the inspection being confined mainly to the busy seasons in the industry.

The work under the office and other building cleaners decree was initiated in the winter and completed during the spring of the present year.

#### *Retail Store Decree*

The second inspection under the present decree for the retail store occupation, which was started in the fall of 1926 and continued during 1927,



was completed in the latter part of 1928. This is exclusive of the re-inspections necessary in connection with the adjustment of non-compliances. The work during the present year has been confined mainly to inspection in the western part of the state and reinspection in the metropolitan district and the eastern section of Massachusetts. There are a number of non-compliances outstanding which will doubtless require publication in 1929.

In the inspection work for the entire state, wage records for tabulation of earnings were secured for 29,295 women and girls in 2,392 firms. Weekly rates were available for 23,855 employees in 2,182 firms. These rates are shown by occupations in Table III and by size of cities and towns for chain and other stores separately in Table IV.

In considering these figures it should be remembered that they represent rates for full-time employment for all regardless of age or length of experience. The rates under the retail store decree, however, vary according to age and experience from \$10 and \$12 to \$14 a week.

From the inspection returns for the state, it appeared that less than 2 per cent of all the women and girls had rates below \$10 a week; and that less than one-third (30.3 per cent) had rates below \$14 a week. That is, more than two-thirds of all the women employed had scheduled rates of \$14 or over a week. More than one-fourth had rates of \$18 and over. (Table III).

The occupational group with the highest rates is made up of the alteration workers, more than one third of whom (35.5 per cent) had rates of \$20 a week and over. The messengers, bundle girls, stock girls, cashiers and examiners, have the lowest rates. These occupations include many of the younger and inexperienced workers who come under the special \$10 and \$12 minimum rates. Of the saleswomen, more than two-thirds (69.6 per cent) had rates of \$14 or over, and one-sixth (15.8 per cent) had rates of \$20 and over. (Table III.)

The classification indicates less variation by size of cities and towns than that by type of establishment. The proportion of women with rates below \$10, \$12 and \$14 a week in various localities is as follows:—For places of less than 20,000 inhabitants, 3.2 per cent, 19.2 per cent, and 42.4 per cent respectively; for places of 20,000 to 100,000 inhabitants, 1.6 per cent, 15.3 per cent and 37.8 per cent respectively; and for places of 100,000 and over, 1.8 per cent, 10.3 per cent, and 27.3 per cent respectively. The corresponding rates for chain and other stores irrespective of locality are: 1.7 per cent, 7.2 per cent, and 19.5 per cent for retail stores other than chain stores; and 2.5 per cent, 32 per cent, and 76.1 per cent for chain stores. (Table IV.)

TABLE III.

*Weekly Rates of 23,855 Women Employed in 2,182 Retail Stores, Including Chain Stores in Massachusetts: By Occupations. (Cumulative)*  
(Based on inspection of payroll records for the period, September, 1926 through September, 1928)

OCCUPATIONS	NUMBER AND PER CENT OF WORKERS WITH RATES																												
	Under \$9		Under \$10		Under \$11		Under \$12		Under \$13		Under \$14		Under \$15		Under \$16		Under \$17		Under \$18		Under \$19		Under \$20		\$20 & Over		Total		
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	
SALESWOMEN																													
Number	180	359	1,595	2,207	5,336	5,946	8,757	11,751	12,431	14,408	16,163	16,490	3,090	19,580															
Per cent	.9	1.8	8.1	11.3	27.3	30.4	44.7	60.0	63.5	73.6	82.5	84.2	15.8	100															
CASHIERS AND EXAMINERS																													
Number	9	15	154	202	381	429	657	827	931	1,003	1,099	1,118	169	1,287															
Per cent	.7	1.2	12.0	15.7	29.6	33.3	51.0	64.3	72.3	77.9	85.4	86.9	13.1	100															
ALTERATIONS																													
Number	-	3	15	18	43	51	125	305	397	536	746	800	440	1,240															
Per cent	-	.2	1.2	1.5	3.5	4.1	10.1	24.6	32.0	43.2	60.2	64.5	35.5	100															
STOCK GIRLS																													
Number	3	15	162	190	378	394	575	635	685	713	775	782	50	832															
Per cent	.4	1.8	19.5	22.8	45.4	47.4	69.1	76.3	82.3	85.7	93.1	94.0	6.0	100															
MESSENGERS AND BUNDLERS																													
Number	41	44	122	136	205	210	296	307	331	332	356	356	2	358															
Per cent	11.5	12.3	34.1	38.0	57.3	58.7	82.7	85.8	92.5	92.7	99.4	99.4	.6	100															
MISCELLANEOUS																													
Number	2	3	74	83	176	187	263	343	384	401	440	449	109	558															
Per cent	3.6	5.4	13.3	14.9	31.5	33.5	47.1	61.5	68.8	71.9	78.9	80.5	19.5	100															
TOTAL																													
NUMBER.	235	439	2,122	2,836	6,519	7,217	10,673	14,168	16,159	17,393	19,579	19,995	3,860	23,855															
PER CENT	1.0	1.8	8.9	11.9	27.3	30.3	44.7	59.4	67.7	72.9	82.1	83.8	16.2	100															

TABLE IV.

*Weekly Rates of 23,855 Women Employed in 2,182 Retail Stores in Massachusetts, Including Chain Stores: By Size of Cities and Towns. (Cumulative)*  
(Based on inspection of payroll records for the period, September, 1926 through September, 1928)

SIZE OF CITIES AND TOWNS	NUMBER AND PER CENT OF WORKERS WITH RATES														Under \$20 Over	Total
	Under \$9	Under \$10	Under \$11	Under \$12	Under \$13	Under \$14	Under \$15	Under \$16	Under \$17	Under \$18	Under \$19	Under \$20				
<i>Less than 20,000</i>																
Retail Store	35	42	133	157	417	475	684	949	1,064	1,130	1,265	1,285	180	1,465		
Per cent	2.4	2.9	9.1	10.7	28.5	32.4	46.7	64.8	72.6	77.1	86.3	87.7	12.3	100		
Chain Store	15	17	130	195	265	300	319	335	345	347	352	352	12	364		
Per cent	4.1	4.7	35.7	53.6	72.8	82.4	87.6	92.0	94.8	95.3	96.7	96.7	3.3	100		
TOTAL	50	59	263	352	682	775	1,003	1,284	1,409	1,477	1,617	1,637	192	1,829		
PER CENT	2.7	3.2	14.4	19.2	37.3	42.4	54.8	70.2	77.0	80.8	88.4	88.5	10.5	100		
<i>20,000 to 100,000</i>																
Retail Store	43	59	112	128	459	567	994	1,537	1,797	1,948	2,256	2,293	529	2,822		
Per cent	1.5	2.1	4.0	4.5	16.3	20.1	35.2	54.5	63.7	69.0	79.9	81.3	18.7	100		
Chain Store	2	8	343	509	918	1,007	1,131	1,227	1,263	1,290	1,312	1,319	23	1,342		
Per cent	.1	.6	25.5	37.9	68.4	75.0	84.3	91.4	94.1	94.8	97.1	98.3	1.7	100		
TOTAL	45	67	455	637	1,377	1,574	2,125	2,764	3,060	3,238	3,568	3,612	552	4,164		
PER CENT	1.1	1.6	10.9	15.3	33.1	37.8	51.0	66.4	73.5	77.8	85.7	86.7	13.3	100		
<i>100,000 and Over</i>																
Retail Stores	114	123	947	1,098	2,505	2,719	5,149	7,579	9,052	9,991	11,642	11,974	3,054	15,028		
Per cent	.8	1.5	6.3	7.3	16.7	18.1	34.3	50.4	60.2	66.5	77.5	79.7	20.3	100		
Chain Stores	26	90	457	749	1,355	2,110	2,596	2,541	2,638	2,687	2,752	2,772	62	2,834		
Per cent	.9	3.2	16.1	26.1	69.0	75.8	84.5	89.7	93.1	94.8	97.1	97.8	2.2	100		
TOTAL	140	313	1,404	1,847	4,460	4,828	7,745	10,120	11,690	12,678	14,394	14,746	3,116	17,862		
PER CENT	.8	1.8	7.9	10.3	25.0	27.3	42.2	56.7	65.4	71.0	80.6	82.6	17.4	100		
<i>Total</i>																
Retail Stores	192	324	1,192	1,383	3,381	3,761	6,827	10,065	11,913	13,069	15,163	15,552	3,763	19,315		
Per cent	1.0	1.7	6.2	7.2	17.5	19.5	35.3	52.1	61.7	67.7	78.5	80.5	19.5	100		
Chain Stores	43	115	930	1,453	3,138	3,456	3,846	4,103	4,246	4,324	4,416	4,443	97	4,540		
Per cent	2.5	2.5	20.5	32.0	69.1	76.1	84.7	90.4	93.5	95.2	97.3	97.9	2.1	100		
TOTAL	235	439	2,122	2,836	6,519	7,217	10,673	14,168	16,159	17,393	19,579	19,995	3,860	23,855		
PER CENT	1.0	1.8	8.9	11.9	27.3	30.3	44.7	59.4	67.7	72.9	82.1	83.8	16.2	100		



## ENFORCEMENT OF WAGE DECREES

*Disposition of Non-Compliances Pending from the Previous Year*

There were pending from the previous year at the beginning of the present fiscal year, December, 1927, 2,779 cases of non-compliance in 232 firms. The majority of these were under the retail store decree and included a number pending from 1926 when the inspection under this decree, completed in the fall of the present year, was started.

Of the entire number of cases outstanding, 2,498 were in 212 retail stores; 125 in six jewelry and optical goods factories; 47 in six office buildings; and 81 in one candy factory. In addition to these there were a few cases in one or two firms under each of the following decrees:—corset, laundry, millinery, muslin underwear and toys and games. A number of the retail store cases were in firms previously advertised for non-compliance. The greater part of these cases are still pending. Nearly all of the cases under the other decrees were settled before the close of the year.

In 134 cases wages were raised or through change of work or method of payment, or reduction of hours, the employees were enabled to earn the minimum. In seven additional cases, adjustment was promised. Two firms involving 14 cases went out of business during the year. In 295 cases the employees had left prior to the reinspection. There were 81 cases (10 in one candy factory and 71 in four jewelry and optical goods factories) in firms advertised during the year.

There are pending at the close of the year 2,248 cases in 196 firms, all—with the exception of one laundry case and 24 cases in three office buildings—under the retail store decree. An outline showing the disposition of the various cases is given in Table V.

At the inspections made in the effort to secure adjustment of the cases pending from the previous year, there were found 101 new cases in 17 firms. With the exception of 52 cases in ten retail stores and 22 cases in two jewelry firms advertised in 1928, adjustments were made or promised in all of the cases before the close of the year.

The situation with respect to the adjustments made is shown in Table VI.

TABLE V.  
*Disposition of Cases of Non-compliance Pending from 1927*  
 (C — Cases; E — Establishments)

SITUATION AND DISPOSITION OF CASES	CANDY		CORSET		JEWELRY		LAUNDRY		MILLINERY		MUSLIN UNDERWEAR		OFFICE CLEANING		RETAIL STORES		TOYS, GAMES		TOTAL	
	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.
Pending from 1927*	81	1	3	1	125	6	21	3	1	1	1	1	47	6	2,498	212	2	1	2,779	232
ADJUSTMENT†																				
Wages raised	—	—	3	1	16	4	12	2	—	—	1	—	8	2	55	15	—	—	95	25
Earning minimum on piece work	4	1	—	—	19	2	—	—	—	—	—	—	—	—	—	—	—	—	23	3
Adjustment promised‡	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	3	—	—	7	3
Change of work or hours reduced	—	—	—	—	—	—	—	—	—	—	—	—	15	1	1	—	—	—	16	2
Left‡	67	1	—	—	19	3	8	2	—	—	—	—	—	—	199	20	2	1	295	27
Firm out of business	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14	2	—	—	14	2
ADVERTISED IN 1928	10	1	—	—	71	4	1	1	1	1	—	—	24	3	2,222	191	—	—	81	5
PENDING	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2,248	196

\*Includes 390 cases pending since 1926. See pages 8 and 9 of report for 1927.

†Does not include cases adjusted before agent's visit.\*\*

‡Adjustment promised or reported by firms. Agent has not revisited.

§Some of those reported as left were probably discharged. This information, however, was not given to the inspector.

\*\*The majority of the cases are adjusted voluntarily on or before the date the decree becomes effective, so that many firms have full compliance at the inspection.

TABLE VI.

*Disposition of New Cases of Non-compliance in Firms Where Cases Were Pending in 1927*

(C — Cases; E — Establishments)

SITUATION AND DISPOSITION OF CASES	CORSET		JEWELRY		RETAIL STORES		TOTAL	
	C.	E.	C.	E.	C.	E.	C.	E.
Number of cases of non-compliance . . .	3	1	38	3	60	13	101	17
ADJUSTMENT*								
Wages raised . . . . .	—	—	4	1	4	3	8	4
Earning minimum on piece work . . .	1	1	—	—	—	—	1	1
Change of work . . . . .	—	—	—	—	2	2	2	2
Adjustment promised . . . . .	—	—	10	1	2	1	12	2
Left . . . . .	2	1	2	1	—	—	4	2
ADVERTISED IN 1928 . . . . .	—	—	22	2	—	—	22	2
PENDING** . . . . .	—	—	—	—	52	10	52	10

\* See notes on Table V.

\*\* These cases are in addition to those listed as pending in Tables V and VII.

*Summary of Adjustments of Inspection for 1928.*

In the course of the inspection work for 1928, wage records were secured for 31,641 women in 1,363 firms under 19\* decrees. In 29,198 of these cases in 1,341 firms, there was compliance with the decrees at the time the inspection was made. There were 1,058 establishments, representing 15,753 cases, which showed 100 per cent compliance at the time of the first inspection visit. In 305 establishments there were 2,443 cases of non-compliance. These came largely under the electrical equipment and supplies decree, where the initial inspection was made this year; and under the laundry, men's furnishings, muslin underwear, retail store and women's clothing decrees, where a number of the firms had previously been advertised for non-compliance.

Of these non-compliances, 995 cases in 302 establishments were settled before the close of the year. In 440 cases adjustment was effected by wage increases or other arrangement as change of work or basis of payment, or reduction of hours that enabled the employees to earn the minimum. In 244 additional cases in 67 establishments adjustment was promised. There were 29 cases covered by the piece rate ruling, and 22, recorded as special license type. In 61 establishments, 218 employees left. There were 21 cases where the employees were discharged or laid off. Three firms, involving 17 cases, went out of business during the year.

There are pending at the close of the year\*\* 1,448 cases in 98 firms. These are distributed under 14 decrees, but come principally under the following decrees:—electrical equipment and supplies, knit goods, laundries, men's furnishings, muslin underwear, paper box, women's clothing and retail stores. The cases outstanding represent approximately 4½ per cent of all the cases for which records were secured. Some of these cases will doubtless be adjusted through the reinspections and conferences preliminary to publication in 1929.

A summary of the situation found at inspection and of the adjustments made during the year under the various decrees is given in full in Table VII.

\* These include inspections in one or more establishments under each of several decrees either on complaint or in connection with other work, in addition to the regular inspections.

\*\* It should be noted that these cases are in addition to those listed as pending from 1927 and found in the reinspections of these cases, as shown in Tables V and VI. The entire number of cases pending at the close of the year is 3,748.



TABLE VII.

## Summary of Adjustments in Connection with Inspections with Inspections in 1928 under Massachusetts Minimum Wage Decrees

(C — Cases; E — Establishments)

SITUATION AND DISPOSITION OF CASES	BREAD AND BAKERY		BRUSH <sup>1</sup>		CANDY <sup>2</sup>		CANNING & PRESERVING OF FRUITS, VEGETABLES, OR LARDERS OF CONFECTIONERY		CORSET		DRUGGISTS' PREPARATIONS <sup>1</sup>		ELECTRICAL EQUIPMENT AND SUPPLIES <sup>3</sup>		KNIT GOODS <sup>1</sup>		LAUNDRY <sup>2</sup>		MEN'S CLOTHING <sup>1</sup>	
	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.
Records for tabulation and establishments represented	1,302	37	134	1	2,068	33	1,080	69	658	16	3	1	5,434	74	429	2	4,806	236	12	2
Compliance at inspection	1,292	37	134	1	1,993	33	1,014	69	618	16	1	1	4,958	74	258	2	4,368	236	12	2
Establishments with full compliance and cases	1,237	34	134	1	1,794	20	564	15	213	10	—	—	1,914	49	258	2	3,137	186	12	2
Cases non-compliance	10	3	—	—	75	13	66	54	40	6	2	1	476	25	171	2	438	50	—	—
ADJUSTMENT <sup>5</sup>	10	3	—	—	49	12	51	14	30	7	—	—	125	26	25	4	103	40	—	—
Wages raised <sup>6</sup>	10	3	—	—	3	2	40	11	2	1	—	—	78	15	1	—	43	17	—	—
Earning minimum on piece work	—	—	—	—	—	—	—	—	2	2	—	—	3	1	1	—	—	—	—	—
Hours reduced or change of work	—	—	—	—	—	—	—	—	21	2	—	—	10	2	6	1	45	13	—	—
Adjusted by piece rate ruling <sup>8</sup>	—	—	—	—	46	10	—	—	—	—	—	—	1	1	—	—	—	—	—	—
Covered by piece rate ruling <sup>8</sup>	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Special license, special license type, or similar case	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Incorrectly recorded by inspector	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Left <sup>9</sup>	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Discharged or laid off	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Firm out of business	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
PENDING	—	—	—	—	26	1	15	2	10	1	2	1	351	9	146	1	335	21	—	—

<sup>1</sup> Inspection on complaint or in connection with other inspection work.<sup>2</sup> Work in process at close of present year.<sup>3</sup> Initial inspection under decree.<sup>4</sup> Work initiated previous year.<sup>5</sup> Does not include cases adjusted before agent's visit.\*<sup>6</sup> Includes one case adjusted by increasing rate of commission.<sup>7</sup> Adjustment promised or reported by firms. Agent has not revisited.<sup>8</sup> Piece rate ruling.—Where great majority of employees on given process are making minimum or over, the rates are considered as conforming with the decree.<sup>9</sup> Some of those reported as left were probably discharged. This information, however, was not given to the inspector.

\* The majority of the cases are adjusted voluntarily on or before the date the decree becomes effective so that many firms have full compliance at the inspection.

TABLE VII. (Concluded)

## Summary of Adjustments in Connection with Inspections in 1928 under Massachusetts Minimum Wage Decrees

(C — Cases; E — Establishments)

SITUATION AND DISPOSITION OF CASES	MEN'S FURNISHINGS		MILLS-NEERY		MUSLIN UNDERWEAR		OFFICE CLEANING <sup>4</sup>		PAPER BOX <sup>1</sup>		RETAIL STORES <sup>4</sup>		STATIONERY GOODS AND ENVELOPES <sup>1</sup>		TOYS, GAMES		WOMEN'S CLOTHING		TOTAL	
	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.
Records for tabulation and establishments represented . . . . .	4,299	69	1,417	91	2,480	91	295	88	298	7	4,102	325	33	2	17	1	2,774	218	31,641	1,363
Compliance at inspection . . . . .	3,947	69	1,406	91	2,333	91	250	79	189	6	3,725	316	24	2	17	1	2,659	215	29,198	1,341
Establishments with full compliance and cases . . . . .	958	41	1,085	85	1,215	60	225	72	45	3	1,413	249	—	—	17	1	1,880	191	15,753	1,058
Cases non-compliance . . . . .	332	28	11	6	147	31	45	16	109	4	377	76	9	2	—	—	115	27	2,443	305
ADJUSTMENTS . . . . .	184	36	11	6	91	41	42	14	6	4	180	64	3	1	—	—	86	30	995	302
Wages raised . . . . .	29	10	1	1	30	14	39	12	1	1	34	19	3	1	—	—	43	13	356	120
Earning minimum on piece work . . . . .	40	7	—	—	16	5	—	—	—	—	—	—	—	—	—	—	—	—	62	15
Hours reduced or change of work . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22	3
Adjustment promised <sup>7</sup> . . . . .	2	1	3	3	9	3	—	—	—	—	117	30	—	—	—	—	6	4	244	67
Covered by piece rate rulings . . . . .	12	2	6	1	8	4	—	—	1	1	—	—	—	—	—	—	1	1	29	10
Special license, special license type, or similar case . . . . .	8	5	—	—	6	6	1	1	2	1	1	1	—	—	—	—	1	1	22	17
Incorrectly recorded by inspector . . . . .	—	—	—	—	—	—	—	—	—	—	3	1	—	—	—	—	1	1	4	2
Left . . . . .	84	9	1	1	15	8	—	—	1	1	22	11	—	—	—	—	16	8	218	61
Discharged or laid off . . . . .	1	1	—	—	—	—	2	1	—	—	—	—	—	—	—	—	18	2	21	4
Left out of business . . . . .	8	1	—	—	7	1	—	—	—	—	2	—	—	—	—	—	—	—	17	3
PENDING . . . . .	168	12	—	—	56	8	3	3	104	1	197	29	6	1	—	—	29	8	1,448	98

<sup>1</sup> Inspection on complaint or in connection with other inspection work.<sup>2</sup> Work in process at close of present year.<sup>3</sup> Initial inspection under decree.<sup>4</sup> Work initiated previous year.<sup>5</sup> Does not include cases adjusted before agent's visit.\*<sup>6</sup> Includes one case adjusted by increasing rate of commission.<sup>7</sup> Adjustment promised or reported by firms. Agent has not revisited.<sup>8</sup> Piece rate ruling:—Where great majority of employees on given process are making minimum or over, the rates are considered as conforming with the decree.<sup>9</sup> Some of those reported as left were probably discharged. This information, however, was not given to the inspector.

\* The majority of the cases are adjusted voluntarily on or before the date the decree becomes effective, so that many firms have full compliance at the inspection.

*Minimum<sup>1</sup> Wage Decree<sup>2</sup> Made Effective the Year 1928.*

KIND OF WORK COVERED	WORKERS AFFECTED		Wage Rates	Qualifications	DATE	
	Class	Age			Decree Entered	Decree Effective
Electrical Equipment and supplies	Experienced females of ordinary ability	Any	\$14.00 weekly	To be deemed "experienced" after six months in the industry, three months of which was in a particular factory; provided that an employee who has not been employed in the industry eight months or more and who returns to work in a factory where she has been previously employed may be rated as a beginner for not more than one month.	April 5, 1928	June 1, 1928
	Learners and Apprentices	Any	\$12.00 weekly			

<sup>1</sup> An outline giving the provisions of the various decrees is printed as a separate sheet and is available on request to the commission's office.

<sup>2</sup> A list of all of the decrees established since the enactment of the minimum wage law with their present status is printed in the Annual Report for 1927, page 12.



# REPORT OF THE DIRECTOR OF STANDARDS

FOR THE YEAR ENDING NOVEMBER 30, 1928

FRANCIS MEREDITH, *Director of Standards*

## LEGISLATION ENACTED IN 1928

During the last annual session the general court enacted two amendments to existing laws and passed two resolves of interest in connection with the enforcement of the statutory provisions pertaining to weights, measures and licenses, a brief synopsis of which is given herewith:—

### *Chapter 36, An Act Authorizing Municipal Appropriations for Certain Travelling and Other Expenses of Municipal Officers and Employees*

This act amends section five of chapter forty of the General Laws, which limits the purpose for which municipal appropriations may be made, by inserting a new clause specifically authorizing such appropriations for the necessary expenses of municipal officers and employees of municipal departments incurred outside the commonwealth in securing information upon matters in which the city or town is interested or which may tend to improve the service in such department. It also provides that such expenses may also be incurred within the commonwealth and in that case shall be chargeable against any appropriation made for the ordinary maintenance of the department incurring the same. This legislation should enable many local sealers to increase their efficiency with corresponding benefit to their communities by attending the annual sealers' conventions and other conferences which they have not been permitted to attend in the past because of questions raised as to the legality of expenditures of municipal funds for such purposes.

### *Chapter 214, An Act Making Abuse of the Uniform of the Military, Naval or Other Forces of the United States Ground for the Revocation of the License of a Hawker or Pedler*

Section ten A, chapter two hundred and sixty-four, General Laws, prohibits and penalizes the use of the uniform, or any distinctive part thereof, of the United States army, navy, marine corps, revenue cutter service, or coast guard, or of the national guard, by any person while soliciting alms, or while engaged, for personal profit, in selling merchandise or taking orders for the same, in seeking or receiving contributions in support of any cause, enterprise or undertaking or in soliciting or receiving subscriptions to any book, paper or magazine.

Complaints of such abuse of the uniform by licensed pedlars have been sufficiently numerous to attract the attention of the American Legion and others interested in maintaining the honor and dignity of the uniform and the government which it represents. It was found, however, that pedlars' licenses could not be revoked upon such complaints until after conviction had been secured in court and, upon petition of representatives of the American Legion, chapter 214 was enacted during the recent legislative session. This act amends section 30, chapter 101, General Laws, so that hereafter any license granted by the director of standards to a hawker or pedler may be revoked by him upon submission to the director of evidence satisfactory to him that the licensee has used the uniform, or any distinctive part thereof, in violation of section ten A of chapter two hundred and sixty-four of the General Laws.

*Chapter 30, Resolve Providing for an Investigation by a Special Commission Relative to Fees for Licenses and Permits of Which the Proceeds Form Part of the Income of Cities and Towns, and Relative to Fees and Charges for Service Rendered by Cities and Towns*

This resolve establishes a special commission consisting of the state secretary, the commissioner of corporations and taxation and the director of accounts to make a survey and study of fees and charges which form a part of the income of cities and towns, and to consider the advisability of increasing or otherwise revising such fees and charges so as to represent a fair equivalent for the privileges granted and the service rendered, and to report with drafts of legislation to carry their recommendations into effect.

*Chapter 62, Resolve Providing for an Investigation into the Laws Relating to Hawkers and Pedlers, With a View to Making Such Changes Therein as May Appear Expedient*

This resolve provides that the commissioner of labor and industries, the chairman of the commission on administration and finance or some other member of said commission to be designated by such chairman, and the attorney general or an assistant attorney general to be designated by the attorney general, shall constitute a special unpaid commission to investigate the general laws relating to hawkers and pedlers and certain proposed amendments thereto and to recommend such changes in such general laws as may appear desirable and expedient.

By the enactment of chapter 185, acts of 1927, pamphlets, provisions, yeast, live animals, except live poultry, brooms, hand tools used in making boots and shoes, and gas and electric fixtures and appliances were removed from the list of exempted articles which might be peddled without license, thus placing pedlers of these articles upon the same plane as those peddling dry goods, clothing, boots and shoes, fish, fruit and vegetables, and numerous other wares and commodities for the peddling of which a license has been specifically required by statute.

In general, pedlers affected by this change in the statute accepted the situation and conformed to the law by securing licenses, but a comparatively small group, interested in the peddling of bakery products, butter, cheese and meats, instead of procuring necessary licenses, petitioned the general court for further changes in the law so as to permit peddling of bakery and dairy products and meats without license. These changes were embodied in Senate Bill 345 which was vetoed by the governor whose veto was sustained by the House of Representatives, and the resolve providing for investigation of the general subject was then passed.

#### STANDARDIZATION

Since the division of standards was established in 1920, there has been a material change in the popular conception of the meaning of the word "standards". During the World War, conditions developed from time to time which emphasized the necessity of the formulation and application of standards in order to secure efficiency in industry. Previous to that time the average person usually considered standards as being necessary only in connection with weights and measures used in trade and commerce. Standardization is now considered necessary in all large industries for the simplification of manufacturing processes with consequent lowering of costs of production, and industrial engineers are employed with that end in view.

The broadened field of standardization has been recognized by the general court and legislation enacted since 1920 authorizes the director of standards to assist manufacturers in standardizing their products (chap. 369, acts of 1920); to establish units of measurement to be observed in

the sale of wooden shingles (chap. 551, acts of 1920); to prescribe regulations governing cans or containers used in the purchase or sale of milk or cream at wholesale, and to authorize sealing of such containers by the manufacturer upon his agreement to conform to such regulations (chap. 45, acts of 1921); to approve shape and dimensions of paper or fibre cartons and to authorize their use as measures in the sale of certain viscous or semi-solid commodities specified by him (chap. 374, acts of 1921); to examine and approve or disapprove any type of weighing or measuring device, which may be submitted for that purpose by the manufacturer of such device or by any sealer of weights and measures (chap. 72, acts of 1925); and to establish legal standard size for anthracite coal sold in the commonwealth (chap. 382, acts of 1926).

With the assistance of a limited inspectional force, the director has been able to perform all of these additional duties to the general satisfaction of manufacturers and others affected, as faults in design or construction are often found upon inspection which the manufacturer has an opportunity to correct at the source and thus avoid possible condemnation on account of inaccuracies which may develop when a weighing or measuring device is submitted to a sealer of weights and measures to be tested and sealed.

#### DIVISION PUBLICATIONS

These publications were issued during the year:—

1. Report of the Director of Standards for the year ending November 30, 1927.

2. Bulletin No. 25, November, 1928, containing a synopsis of new legislation relating to weights, measures and licenses; specifications and tolerances for vehicle-tanks used in the sale of gasoline, etc., by measure; revised rules and regulations governing the use of taximeters and hub odometers in determining cost of transportation; a revised list of approved and disapproved weighing and measuring devices, vending machines, and cartons used in the sale by measure of ice cream and other viscous and semi-solid commodities; and a list of manufacturers of milk jars, wholesale milk containers, ice cream cans, clinical thermometers and apothecaries' glass graduates, who have been authorized by the director of standards to affix the manufacturers' seal upon their products as provided in various statutes.

3. A revised edition of the Sealers' Manual, containing about 220 pages, is now in press and will soon be ready for distribution. The aim of this publication is to outline methods for quickly determining the accuracy or inaccuracy of such weighing or measuring devices as the sealer may be called upon to test and, by instruction and suggestion, to secure uniformity in methods employed by the local sealers throughout the state in the enforcement of the laws and the general performance of their duties. The last edition of this manual was published in 1914 and the many new types of weighing and measuring devices developed since that time have caused an imperative demand for a revised manual.

#### CLINICAL THERMOMETERS

In the last annual report reference was made to a state-wide survey of clinical thermometers, in drug stores and institutions, and the resultant testing and rejection of a considerable number of these thermometers in the laboratory of this division. Many of these instruments were produced by manufacturers whose authority to use the seal had later been revoked and, as a result of these tests, one other manufacturer surrendered his authorization to seal his products.

Since the last report, a comparatively small number of sealed thermometers taken at random from dealers' stocks showed an efficiency of 91.05 per cent, as compared with 81.70 per cent shown by similar tests in 1927. Although not conclusive, these figures are strongly indicative of greater



vigilance on the part of those now authorized to use the manufacturer's seal.

During the year two additional manufacturers have been authorized to seal thermometers of their manufacture which conform to samples approved by the director of standards, and the application of one other for similar authority is now pending.

At the close of the fiscal year there were 6,526 thermometers in the laboratory awaiting test.

Authorized manufacturers are required to file in this office a detailed record of all bearing the Massachusetts seal-mark sold by them and these records indicate the sale of 229,592 of these instruments during the past year.

Clinical thermometers of German manufacture to the number of 507 were submitted for test. Only 11 or 2.16 per cent of these passed a satisfactory test the remaining 496 being rejected for various defects and inaccuracies.

The subject of clinical thermometers continues to engage the attention of federal authorities and a hearing was held by the division of simplified practice, department of commerce, at Washington, D. C., on March 30, which Inspector James J. Dawson attended as a representative of this division.

#### LABORATORY WORK

##### *Calibration of State Standards for Cities and Towns*

ARTICLE	Tested	Adjusted	Sealed	Con-demned
Avoirdupois weights . . . . .	690	391	682	8
Metric weights . . . . .	16	1	16	—
Glass graduates . . . . .	24	—	21	3
Dry measures . . . . .	7	—	7	—
Linear measures . . . . .	1	—	1	—
Liquid measures . . . . .	12	—	6	6

##### *Clinical Thermometers*

DESCRIPTION	Tested	Passed	Rejected	Per Cent Passed
Massachusetts seal . . . . .	246	224	22	91.05
Domestic unsealed . . . . .	4234	3251	983	76.78
Foreign unsealed . . . . .	507	11	496	2.17
Totals . . . . .	4987	3486	1501	69.90

##### *Cans, Cartons, and Other Containers, Measures, and Weighing and Measuring Devices Submitted in Connection with Manufacturers'*

##### *Applications for Approval, or for Authority to Affix the Manufacturers' Seal Thereon*

ARTICLE	Tested	Accurate	Inac-curate
Cartons to be used in sale of ice cream, oys- ters and other specified commodities . . . . .	154	96	58
Computing scales . . . . .	4	3	1
Computing scale price-charts . . . . .	9	8	1
Ice cream cans . . . . .	14	—	14
Lubricating-oil bottles . . . . .	3	1	2
Wholesale milk cans . . . . .	4	2	2
Fabric-measuring devices . . . . .	2	1	1
Wire-measuring devices . . . . .	2	—	2
Hub odometer gear combinations . . . . .	69	69	—
Totals . . . . .	261	180	81

*Miscellaneous Tests*

ARTICLE	Tested	Accurate	Inac- curate
Automatic test-measures for gasoline pumps	46	42	4
Avoirdupois Weights . . . . .	11	11	—
Troy weights . . . . .	3	3	—
Apothecary weights . . . . .	15	15	—
Scales . . . . .	2	1	1
Glass graduates . . . . .	1	1	—
Linear measures . . . . .	1	—	1
Liquid measures . . . . .	2	1	1
Manometer . . . . .	1	1	—
Test-sheets for leather-measuring machines	3	3	—
Totals . . . . .	85	78	7

One manometer was tested for the surgeon general; 15 aluminum rings used in determining sizes of apples were tested and verified for the department of agriculture; 6 samples of coal were tested with standard screens to determine size; 3 test-sheets were verified for use in calibrating leather-measuring machines; 64,857½ yards of sewing thread were measured; 8 packages of macaroni and 1 can of prepared paint were tested to determine quantity of contents.

The primary standard weights and measures in the custody of the director were forwarded to the national bureau of standards for comparison with the standards of the United States in compliance with section 3, chapter 98, General Laws.

*FIELD WORK OF INSPECTORS*

To each inspector is assigned certain cities and towns in which it is his duty to instruct the local sealers and supervise their work. The annual report which each sealer is required by statute to file with the director at the close of each year serves as an index of the extent to which the new and inexperienced sealer has profited by the advice and instruction of the inspector, and whether he has carefully studied the pamphlet laws and Sealers' Manual with which he has been supplied.

In the case of the more experienced sealer, the annual report shows whether he is inclined to neglect some important phase of his work while over-emphasizing others of minor importance.

When the reports have been received and tabulated it is possible to determine those towns in which there appears to be a need for improvement in the character or amount of work performed by the sealer. With this information at hand, each inspector endeavors to advise and instruct the sealer so that he may be better equipped to perform his duties with greater intelligence and efficiency. The inspectors also make tests of weighing and measuring devices and inspections and re-weighings of commodities which are ready for delivery to purchasers, besides the investigation of complaints and prosecution when circumstances warrant such action. They also periodically test, adjust, and seal or condemn weighing and measuring devices used in the receipt and disbursement of supplies in all state institutions and departments. A summary of some of the work performed by the inspectors is given herewith.

*Number of Inspections.*—Stores, 718; gasoline pumps, 547; pedlers, 442; transient vendors, 276; packages, 1,563; miscellaneous, 118; total, 3,664.

*Weighing and Measuring Devices.*—Sealed, 4,974; unsealed, 1,127; total number inspected 6,101. Accurate, 1,347; inaccurate, 68; total number tested, 1,415.

*Clinical Thermometers.*—Sealed, 552; unsealed, 40; total number inspected, 592.

*Reweighings and Remeasurements*

COMMODITY	Number	Correct	Under	Over
Miscellaneous packages . . . . .	1563	613	256	694
Coal (in paper bags) . . . . .	98	29	43	26
Coal (loads) . . . . .	31	5	12	14
Ice . . . . .	21	7	4	10
Totals . . . . .	1713	654	315	744

Upon complaint from a leather-manufacturing concern, the sealer of Norwood referred the matter to this office and 14 barrels of leather paint purporting to contain 731 gallons, were remeasured by inspectors on May 3, 10 and 22. The shipments were from without the state and remeasurements revealed a shortage of 45 gallons, 3 quarts, 3 gills. It is understood that adjustment was made in a substantial amount as prosecution was not involved.

*State Institutions*

ARTICLE	Number Tested	Adjusted	Sealed	Con- demned
Scales . . . . .	246	98	230	16
Weights . . . . .	274	59	260	14
Gasoline pumps . . . . .	4	1	2	2
Oil pumps . . . . .	1	—	1	—
Glass graduates . . . . .	12	—	2	10
Liquid measures . . . . .	21	—	10	11
Totals . . . . .	558	158	505	53

During the year 33 applications for certificates of fitness for appointment as measurers of leather were received. Certificates were issued to 21 of these applicants, 9 failed to qualify and 3 were not examined for various reasons.

Complaints were received and investigated in 53 instances, involving violations of the weights and measures, hawkers' and pedlers', and transient vendors' laws.

**PROSECUTIONS**

There were 178 complaints entered and prosecuted in the courts by inspectors of this division. The great majority of these prosecutions were rendered necessary by the attitude of some of the large baking concerns, selling their products from house to house, who refused to comply with the law requiring hawkers and pedlers to be licensed.

In the superior courts the appealed cases in the following table were disposed of as follows:—One pedler of bakery products was found guilty by a jury and fined \$15; six pleaded guilty and cases were filed on payment of costs; twenty-six pleaded guilty and were fined \$5 each; ten pleaded guilty and were fined \$15 each; one pleaded guilty and case was filed on payment of \$5 as costs; twenty-one pleaded nolo and cases were filed upon payment of \$5 as costs in each case; two defendants were defaulted; and ten cases are still pending in the superior court in Bristol and Plymouth counties. In the other four appealed cases the defendants pleaded guilty and two were fined \$10 each, while the other two cases were filed.

The nature of the complaints and disposition of the cases are shown in the following tabulation:—



NATURE OF OFFENSE	Number of complaints	Convicted	Discharged	Pleaded nolo	Defaulted	Continued	Dismissed without finding	Filed	Amount of fines imposed	Sentence suspended	Appealed
Peddling without license	122	117	-	2	1	4	1	39	\$576	-	77
Bakery products	2	2	-	-	-	-	-	-	40	-	-
Coal	3	3	-	-	-	-	-	-	20	-	-
Fruits & vegetables	1	1	-	-	-	-	-	-	50	-	1
Dry goods	1	1	-	-	-	-	-	-	15	-	-
Groceries	1	1	-	-	-	-	-	-	16	-	-
Confectionery	1	1	-	-	-	-	-	-	1	-	-
Sandwiches	1	1	-	-	-	-	-	-	1	-	-
Ice cream	3	3	-	-	-	-	-	2	5	-	-
Rugs	2	-	2	-	-	-	-	-	-	-	-
Peddling under expired license	5	5	-	-	-	-	-	1	45	-	1
Conducting transient business without license	22	16	4	2	-	-	2	9	125	-	1
Not having license plates attached to vehicle	2	2	-	-	-	-	-	2	-	-	-
Giving insufficient weight of butter	1	1	-	-	-	-	-	-	50	-	-
Giving insufficient weight of mushrooms	1	1	-	-	-	-	-	-	10	-	-
Giving insufficient weight of coal	1	-	1	-	-	-	-	-	-	-	-
Giving insufficient weight of potatoes	1	1	-	-	-	-	-	1	-	-	-
Giving insufficient weight of beef	1	1	-	-	-	-	-	-	25	-	1
Giving insufficient measure of olive oil	1	1	-	-	-	-	-	-	25	-	-
Giving insufficient measure of vinegar	1	1	-	-	-	-	-	-	25	1	-
Attempt to give insufficient weight	1	1	-	-	-	-	-	-	10	-	-
Using false scale	2	2	-	-	-	-	-	2	-	-	-
Using condemned scale	2	2	-	-	-	-	-	-	20	-	-
Larceny	1	-	1	-	-	-	-	-	-	-	-
Totals	178	163	8	4	1	4	3	57	\$1,051	1	81

#### OFFICE WORK

Chapter 72, acts of 1925, requires the director to examine any weighing or measuring device which may be submitted to him by the manufacturer or any sealer of weights and measures and to determine whether or not its construction is such as to ensure reasonably permanent accuracy and whether or not it may be used to facilitate the perpetration of fraud, approving or disapproving it accordingly. Of 42 devices submitted under this act during the year, 41 were finally approved and 1 disapproved.

Under section 283, chapter 94, General Laws, two coin-operated vending machines were examined and approved, and approval of a coin-operated turnstile to be used in the collection of carfares, etc., is pending.

Under section 22, chapter 94, General Laws, paper or fibre cartons submitted by six manufacturers were approved for use as measures in the sale of certain specified commodities.

Many of the devices could not be approved in the form submitted and efforts were made in all such cases to assist the manufacturer by suggesting changes in design or construction which would tend to remove the objectionable features.

By maintaining contact and exchanging inspection reports with the department of public health, the commission on the necessities of life, and the Boston station of the United States food and drugs inspection division, conditions were corrected in many cases without the overlapping of inspectional work which might otherwise occur.

The sum of \$126,340.05 was received from various sources, including fees for hawkers' and pedlers' and transient vendors' licenses, and for testing clinical thermometers. Cash to the amount of \$3000 was deposited and surety bonds amounting to \$257,500 were filed with the director by applicants for transient vendors' licenses, to be subject to legal claims which might arise from business conducted under such licenses. The financial statement which concludes this report shows details of all receipts and disbursements.

## LICENSES

*Transient Vendors*

The number of transient vendors' licenses issued was 521 and the fees from this source amounted to \$13,025. There were 22 prosecutions found necessary for the proper enforcement of this law, the defendants being chiefly operators of roadside stands during the summer season and individuals engaging in the sale of fireworks, Christmas goods, and other seasonal lines of merchandise.

*Hawkers and Pedlers*

There was an increase of 280 in the number of hawkers' and pedlers' licenses for which fees were received during the year, the principal cause of this increase being the amendment of the law by chapter 185, acts of 1927, which materially reduced the number of exempted articles which may legally be peddled without license. There were 321 disabled veterans' licenses issued without the payment of fees, a decrease of eight over the preceding year.

## EDUCATIONAL AND CO-OPERATIVE ACTIVITIES

Sealers and others were kept informed as to current legislation, regulations, and other matters of interest by means of the bulletin and other printed matter. Cards containing brief reference tables of weights and measures, equivalents of common kitchen measures, and approximate weights of some common household commodities were distributed to housekeepers and domestic science classes upon application.

The director and all inspectors attended the annual convention of the Massachusetts Association of Sealers of Weights and Measures, at North Adams, October 10 and 11. There was a large attendance of sealers from all sections of the state and representatives of weights and measures departments from several other states were present. An interesting feature was the "Question Box" containing questions submitted by several of the sealers pertaining to problems arising in connection with their work which were answered in detail by inspectors to each of whom particular questions were assigned. The prize essays upon the subject of "The Value of a Sealer of Weights and Measures to a Community" which were submitted by the pupils of the local high schools also occasioned much interest.

## LOCAL SEALERS OF WEIGHTS AND MEASURES

Following is a summary of work performed by sealers of weights and measures in the cities and towns of the commonwealth. In past years it has invariably been necessary to call attention to some towns wherein the sealers had failed to file the annual report required by statute. This year it is worthy of note that, for the first time in history, every local sealer has filed his annual report in accordance with the statutory requirement.

## SUMMARY OF LOCAL SEALERS' WORK

ARTICLE	Ad-justed	Sealed	Non-sealed	Con-demned
<i>Scales</i>				
Platform (5000 lbs. or over)	469	2,981	303	220
Platform (100 to 5000 lbs.)	5,539	24,264	879	921
Counter (100 lbs. or over)	193	1,569	24	45
Counter (under 100 lbs.)	2,797	19,391	391	492
Beam (100 lbs. or over)	254	1,364	30	108
Beam (under 100 lbs.)	75	836	22	18
Spring (100 lbs. or over)	298	5,743	34	558
Spring (under 100 lbs.)	3,405	30,023	313	1,790
Computing (100 lbs. or over)	120	584	15	24
Computing (under 100 lbs.)	4,933	22,123	216	1,269
Personal weighing (slot)	121	2,832	4	231
Prescription	149	1,653	79	70
Jewellers'	4	110	4	1
Totals	18,357	113,478	2,314	5,747
<i>Weights</i>				
Avoirdupois	8,483	164,969	1,224	723
Apothecary	420	20,045	257	649
Metric	314	8,409	530	216
Troy	39	2,197	44	61
Totals	9,256	195,620	2,055	1,649
<i>Measures</i>				
Dry	—	847	—	26
Liquid	231	53,783	402	778
Yardsticks	—	8,765	—	248
Tapes	—	139	—	1
Glass graduates	—	864	—	37
Ice cream cans	2	1,179	—	20
Fuel baskets	—	1,860	—	63
Milk jars	—	662	—	4
Oil jars	—	2,277	—	205
Vehicle tanks (compartments)	20	1,984	6	11
Totals	253	72,360	408	1,393
<i>Automatic Measuring Devices</i>				
Gasoline pumps	2,706	18,076	517	814
Gasoline meters	167	1,393	4	55
Kerosene pumps	221	3,116	87	107
Oil pumps (lubricating, etc.)	1,012	9,435	3,832	161
Molasses pumps	50	1,684	115	3
Quantity stops (on measuring pumps)	11,482	106,467	28	12
Leather-measuring machines	2	392	6	34
Cloth-measuring machines	5	961	1	20
Taximeters	5	2,668	—	102
Totals	15,650	144,192	4,590	1,308
Sealing fees collected.	\$58,735.47			
Adjusting charges	5,793.68			
Total collected	\$64,529.15			



*Reweighings and Remeasurements*

COMMODITY	Number of Reweigh- ings, etc.	Correct	Under	Over
Bread . . . . .	34,575	20,611	3,825	10,139
Butter . . . . .	14,210	12,069	1,025	1,116
Charcoal (in paper bags) . . . . .	1,086	961	43	82
Coal (loads) . . . . .	3,887	1,843	363	1,681
Coal (in paper bags) . . . . .	9,662	5,044	1,301	3,317
Coke (in paper bags) . . . . .	1,198	1,008	67	123
Confectionery . . . . .	7,139	5,711	481	947
Dry commodities (groceries, etc.) . . . . .	34,362	27,739	2,724	3,899
Dry goods . . . . .	504	359	71	74
Flour . . . . .	9,808	6,599	1,408	1,801
Fruit and vegetables . . . . .	11,763	8,463	1,743	1,557
Grain and feed . . . . .	1,052	800	149	103
Hay . . . . .	527	255	217	55
Ice . . . . .	1,151	603	181	367
Liquid commodities . . . . .	6,335	5,721	261	353
Meats and provisions . . . . .	12,664	10,193	1,207	1,264
Wood (cord) . . . . .	576	506	26	44
Wood (kindling) . . . . .	582	532	9	41
Wood (in paper bags) . . . . .	4,812	4,766	31	15
Leather (skins) . . . . .	69	69	—	—
Miscellaneous . . . . .	1,406	761	178	467
Totals . . . . .	157,368	114,613	15,310	27,445

Other activities shown by the sealers' annual reports include the measurement of 207¼ cords of wood and the weighing of 1,793 loads of coal, hay, grain, crushed stone, gravel and other commodities for municipal departments; inspections of 2,181 clinical thermometers, 2,211 coal weighers' certificates, 2,041 ice scales, 710 junk scales, 2,976 pedlers' scales, 573 transient vendors, 4,615 pedlers' licenses, 35,372 markings of food packages, 15,689 weight statements on bread, 14,385 metal ice cream containers, 11,477 paper and fibre cartons, 9,408 milk jars, 3,639 wholesale milk cans, and 3,710 other miscellaneous inspections. They also tested 8,128 berry baskets, 453 Climax baskets, 4,767 cartons, 6,377 sealed milk jars, 679 standard boxes for farm produce, 95 United States standard barrels, 175 wood baskets, 228 fuel bags, 3,887 gasoline pumps (retests after sealing), and 742 other miscellaneous tests.

## PROSECUTIONS BY SEALERS

NATURE OF OFFENSE	Number of complaints	Convicted	Discharged	Pleaded nolo	Filed	Defaulted	Amount of fines imposed	Appeal pending
Giving insufficient weight of bread . . . . .	3	3	—	—	—	—	\$60	—
Giving insufficient weight of butter . . . . .	1	1	—	—	—	—	10	—
Giving insufficient weight of chicken . . . . .	2	—	2	—	—	—	—	—
Giving insufficient weight of coal . . . . .	6	5	1	—	—	—	335	—
Giving insufficient weight of fruit . . . . .	1	1	—	—	—	—	5	—
Giving insufficient weight of grapes . . . . .	1	1	—	—	—	—	50	1
Giving insufficient weight of ham . . . . .	3	3	—	—	—	—	40	—
Giving insufficient weight of ice <sup>1</sup> . . . . .	23	19	2	—	—	2	340	—
Giving insufficient weight of matzos . . . . .	1	1	—	—	—	—	10	—
Giving insufficient weight of meat . . . . .	4	4	—	—	1	—	70	1
Giving insufficient weight (miscellaneous) . . . . .	7	7	—	—	—	—	120	—
Giving insufficient measure of wood . . . . .	2	1	1	—	—	—	25	1
Attempt to give insufficient weight of meat . . . . .	1	1	—	—	—	—	50	—
Selling coal without weigher's certificate . . . . .	1	1	—	—	—	—	20	—
Failures to post price-list on ice vehicle . . . . .	2	2	—	—	—	—	15	—
Using false scale . . . . .	3	7	1	—	—	—	105	—
Using unsealed scale . . . . .	6	6	—	—	—	—	80	2
Using illegal weighing device . . . . .	1	1	—	—	—	—	5	—
Failure to have scale on ice wagon . . . . .	1	1	—	—	—	—	10	—
Refusal to exhibit scale to sealer . . . . .	2	2	—	—	—	—	10	—
Peddling bakery products without license . . . . .	40	35	2	1	5	2	425	28
Peddling blankets without license . . . . .	1	1	—	—	—	—	20	—
Peddling dry goods without license . . . . .	1	1	—	—	—	—	20	—
Peddling flavoring extracts without license . . . . .	1	1	—	—	—	—	25	—
Peddling fruit & vegetables without license . . . . .	4	3	1	—	—	—	55	—
Peddling groceries without license . . . . .	1	1	—	—	—	—	50	—
Peddling ice cream without license . . . . .	3	3	—	—	—	—	25	—
Peddling neckties without license . . . . .	4	3	—	—	—	1	35	2
Peddling pennants without license . . . . .	4	4	—	—	—	—	170	—
Peddling without license (miscellaneous) . . . . .	31	28	2	1	3	1	365	—
Peddling under another's license . . . . .	1	1	—	—	1	—	35	—
Employing minor to peddle without license . . . . .	1	1	—	—	—	—	10	—
Peddling under expired license . . . . .	1	1	—	—	—	—	10	—
Conducting transient business without license . . . . .	3	2	—	1	—	—	55	—
Totals . . . . .	172	142	12	3	10	6	\$2,655	35

<sup>1</sup>Court ordered restitution to be made in two of these cases.

## FINANCIAL STATEMENT OF THE DIVISION OF STANDARDS

*Receipts*

1474 State (hawkers' and pedlers') license fees . . . . .	\$73,700.00
497 County (hawkers' and pedlers') license fees . . . . .	2,208.00
890 City (hawkers' and pedlers') license fees . . . . .	23,119.00
1096 Town (hawkers' and pedlers') license fees . . . . .	13,004.00
521 Transient vendors' license fees . . . . .	13,025.00
551 Transfer fees . . . . .	551.00
<hr/>	
Total receipts from license fees . . . . .	\$125,607.00
Fees received for licenses not issued . . . . .	144.00
Fees for testing clinical thermometers . . . . .	248.92
Interest on deposits . . . . .	340.13
<hr/>	
Total . . . . .	\$126,340.05

*Payments to State Treasurer*

1474 State license fees . . . . .	\$73,700.00
497 County license fees . . . . .	497.00
890 City license fees . . . . .	890.00
1096 Town license fees . . . . .	1,096.00
521 Transient vendors' license fees . . . . .	13,025.00
551 Transfer fees . . . . .	551.00
Fees for testing clinical thermometers . . . . .	248.92
Fees received for licenses not issued . . . . .	144.00
Interest on deposits . . . . .	340.13
<hr/>	
Total payments to state treasurer . . . . .	\$90,492.05

*Payments to County, City and Town Treasurers on Account of Hawkers' and Pedlers' Licenses*

Counties . . . . .	\$1,711.00	
Cities . . . . .	22,229.00	
Towns . . . . .	11,908.00	
	<hr/>	\$35,848.00
		<hr/>
		\$126,340.05

*Summary*

Appropriation, personal services . . . . .	\$29,160.00	
Expended . . . . .	28,687.42	
	<hr/>	\$472.58
Appropriation, general expenses . . . . .	\$9,800.00	
Expended . . . . .	6,953.09*	2,846.91
	<hr/>	
Unexpended balance . . . . .		\$3,319.49
Total income to the commonwealth from licenses, interest, fees for testing clinical thermometers, etc. . . . .		\$90,492.05
Total expenditures . . . . .		*35,640.51
		<hr/>
Excess of income over expenditures . . . . .		\$54,851.54

\*Not including outstanding bills estimated at \$750.



# REPORT OF THE DIVISION OF STATISTICS

ROSSELL F. PHELPS, *Director*

The report of the work of the division of statistics during the fiscal year ending November 30, 1928, is submitted herewith. The principal branches of the work of the division are the collection and publication of statistics of labor and manufactures, the administration of the four public employment offices maintained by the commonwealth, and the answering of inquiries having reference to the industries of the commonwealth, the rates of wages, hours of labor, and the conditions of employment therein. These several branches of the work are discussed in this report.

The statistical data herein presented relate, for the most part, to calendar years, rather than fiscal years, because it is customary in official reports to present the results of statistical research in industrial fields on a calendar year basis. This statement also applies to the statistical records relative to the activities of the four state public employment offices.

While no special investigations into new fields have been undertaken during the past year, the scope of the regular statistical inquiries has been extended somewhat, and attention has been given to the preparation of series of index numbers and to the compilation of comparable data for a series of years in order to show long-time industrial trends. The present day interest in the "regularization of industry" and the elimination of seasonal and cyclical unemployment has resulted in a greatly increased demand for current employment and pay-roll data of a thoroughly representative character. It has, therefore, seemed desirable that the regular monthly surveys conducted by this division be extended and perfected. There are several important groups of industries which are not yet covered by the monthly surveys, and which should be included within the scope of this branch of the statistical work of the department, in order that more comprehensive data, showing industrial trends in the commonwealth, may be available. If this is to be done, an increase in the appropriations for statistical services and contingent expenses will be necessary.

## 1. STATISTICS OF LABOR

The statistics of labor collected by the division are published as "Labor Bulletins", each constituting a "Part" of the "Annual Report on the Statistics of Labor". Numerous press notices, in mimeographed form, containing the results of regular monthly surveys and special inquiries, are issued in order that information of current interest may become immediately available.

*Annual Report on the Statistics of Labor (Public Document No. 15).*

The report for the year 1928, when completed, will consist of three "Parts", as follows:

Part I. Twenty-seventh Annual Directory of Labor Organizations in Massachusetts, 1928 (Labor Bulletin No. 154). This directory contains the name, location, time, and place of meetings, and the name and address of the secretary and business agent of each labor organization having its headquarters in Massachusetts, together with a list of all the national and international labor organizations having one or more affiliated local unions in the United States, and the names and addresses of their respective secretaries, in so far as these data could be ascertained.

The number of organizations listed in this directory was 1,639, of which number 137 were national and international organizations, 67 were state and district councils, 99 were central labor unions and councils, and 1,336 were local unions.

Part II. Time Rates of Wages and Hours of Labor in Massachusetts, 1928 (Labor Bulletin No. 155). A considerable part of the information

presented in this report was obtained from officials of local trade unions and relates to basic rates and hours of labor, the terms of which in most instances are definitely expressed in joint agreements between employers and employees. These data are presented by industries, trades, and occupations and by municipalities represented.

Additional information, obtained from official records of employers, has reference to rates of wages and hours of labor affecting employees in Massachusetts who are engaged in public service (federal, municipal, and metropolitan district), transportation service (steam railroads, street and electric railways, railway express, and passenger bus), and telephone and telegraph service.

As in former years, data with reference to union rates of wages and hours of labor in Boston, Fall River, Springfield, and Worcester were furnished to the United States bureau of labor statistics for publication in its annual report covering a large number of cities in the United States.

Part III. Trend of Employment and Earnings in Manufacturing and Building Construction (Labor Bulletin No. 156). In this report there will be presented, for purposes of permanent record, abstracts of monthly data which were obtained in connection with four regular monthly surveys made by the division and relating, respectively, to the following subjects of inquiry in Massachusetts:

1. Volume of employment and earnings in representative manufacturing establishments;
2. Employment and earnings in the building trades, as reported by building contractors;
3. Unemployment of organized building tradesmen, as reported by officials of building trades unions;
4. Prospective building in 55 municipalities.

While the results of these surveys have been made public in the form of monthly press notices, it has seemed desirable to have them assembled in somewhat condensed form in order that there may be available, in a single printed report, a continuous record for a series of years.

Monthly index numbers representing the trend of employment and earnings in the principal manufacturing industries have been computed and will be presented, together with other index numbers representing fluctuations from month to month in other classes of data included in this report.

#### *Monthly Surveys and Press Notices*

*Employment and Earnings in Manufacturing Establishments.* The collection, from representative manufacturing establishments in Massachusetts, of monthly pay-roll data has become an important branch of the statistical work of the division. The plan followed is that recommended by the Committee on Governmental Labor Statistics of the American Statistical Association, on which committee the department is represented by the director of the division of statistics. In this work the division coöperates with the United States bureau of labor statistics, thus avoiding duplication in the work of collecting similar data by two separate agencies.

The number of manufacturing establishments canvassed each month is approximately 1,000, and constitutes about one-tenth of the total number of manufacturing establishments in the state, while the returns cover approximately 45 per cent of the total number of wage-earners employed in all manufacturing establishments in the state. From time to time the list of representative establishments is revised so as to maintain a truly representative group of reporting establishments by industries, by municipalities, by industries within the principal municipalities, and by size of establishments. It has been found, by comparison of the monthly employment data with the monthly data later obtained in connection with the *exhaustive* annual census of manufactures, that the current monthly data quite accurately represent the trend of employment not only in all



manufacturing establishments as a group, but also the trend of employment in the principal manufacturing industries for which the data are separately presented.

A simple form of questionnaire is used, in order that all inquiries may be answered readily by reference to pay-roll records. In this connection it may be noted that for their convenience in reporting in 1928, all of the establishments canvassed were furnished a special "weekly pay-roll and operating record" sheet, on which provision is made for the entering of pay-roll data for the 52 weeks in the year, and the days and hours the plant worked each week.

The results of the survey are published in mimeographed form, and show the number of establishments reporting in each of 39 leading industries and in 25 leading industrial cities, and for all establishments combined. Similarly, there are given the number of wage-earners normally employed in these same establishments, the number actually employed as shown by the pay-roll for the middle week in the current and the next previous month, together with average weekly earnings for each of the two periods specified. Also, for the period then current are shown the numbers employed in the establishments reported as operating on generally full-time schedules for all employed, so as to indicate the extent of the operating time. In addition, all establishments which can readily do so are requested to furnish pay-roll data by sex, and it is possible to present regularly average weekly earnings for males and females for very nearly all of the important industries.

To each reporting establishment there is sent with the current schedule a summary of the returns for the previous month. In this way the concerns canvassed know definitely the use to which their returns are put and may compare the records for their own establishments with the records for the industry in which they are represented. It is believed that because of this plan they are more apt to report than they would be were the results of the canvass not made immediately available for their information. The press and those on a large mailing list are furnished the releases, as issued.

Space in this report does not permit of a full presentation of the results of this monthly survey, but the series of index numbers in Table I is presented as illustrative of the results obtained and shows, by months, the trend of employment during the three years, 1926, 1927, and 1928, in all manufacturing industries combined, and in the three leading industries in Massachusetts. These three industries together represent about 40

*Table 1.—Index Numbers of Employment of Wage-earners in Representative Manufacturing Establishments in Massachusetts, All Industries, and Three Leading Industries: By Months, 1926, 1927, and 1928*

⤵ (Base:—Annual Census of Manufactures—Average for 1919-1923 equals 100)

MONTHS	ALL INDUSTRIES (100.0 = 653,773 Wage-earners)			COTTON GOODS (100.0 = 113,371 Wage-earners)			BOOTS AND SHOES <sup>1</sup> (100.0 = 78,687 Wage-earners)			WOOLEN AND WORSTED GOODS (100.0 = 58,585 Wage-earners)		
	1926	1927	1928	1926	1927	1928	1926	1927	1928	1926	1927	1928
January . . .	92.7	90.7	82.3	84.6	80.5	65.3	82.6	83.1	68.9	94.3	97.1	86.2
February . . .	94.0	92.3	83.3	85.6	82.0	68.5	87.7	85.1	73.2	94.4	97.8	82.6
March . . .	95.4	91.4	82.1	86.2	80.3	65.8	89.3	84.8	74.0	97.9	95.1	82.1
April . . .	93.4	89.3	80.4	84.8	78.2	64.4	85.3	79.1	68.5	91.9	92.5	80.9
May . . .	92.0	87.7	75.4	82.2	77.1	46.1	84.5	75.4	64.2	89.0	89.1	80.1
June . . .	89.4	85.9	73.6	78.1	77.7	43.9	81.0	68.5	56.6	85.0	89.2	81.3
July . . .	87.1	83.9	72.9	73.1	76.6	41.0	83.5	76.6	64.7	82.9	87.1	80.2
August . . .	89.6	85.9	74.2	75.2	74.8	42.0	88.9	80.0	70.1	88.7	86.0	76.3
September . . .	92.4	87.1	75.6	77.5	76.2	42.2	92.0	79.4	71.8	93.3	87.2	76.3
October . . .	94.6	87.4	78.8	80.2	76.2	54.3	91.9	77.8	71.1	101.6	87.4	80.6
November . . .	93.7	86.2	79.3	80.6	74.3	56.3	85.0	72.3	67.8	101.0	88.5	82.9
December . . .	91.3	83.0	78.9	80.2	67.4	57.5	78.4	62.8	64.4	99.0	88.1	82.2
Average . . .	92.1	87.6	78.1	80.7	76.8	53.9	86.8	77.1	67.9	95.3	90.4	81.0

<sup>1</sup> Including boot and shoe cut stock and findings.



per cent of the wage-earners employed in all manufacturing establishments in the commonwealth. The index numbers for the year 1926 were derived from the annual census data for that year (the latest year for which such data are available), while the index numbers for 1927 and 1928 were derived from data obtained by the monthly survey. When the census data for 1927 shall have become available, the index numbers for that year, based on the census data, will be substituted for those here presented, and the index numbers for the months in 1928 will be adjusted accordingly.

Based on the average for the five-year period, 1919-1923, considered as normal, employment has been continuously below normal during each of the three years 1926, 1927, and 1928 in all industries combined and also in each of the three leading industries, with the exception of the woolen and worsted goods industry in October and November, 1926. In each instance the average for 1928 was below that for 1927 and the average for 1927 was below that for 1926. The marked decrease in employment in the cotton goods industry in 1928 was due principally to the prolonged strike of textile operatives in New Bedford. The decreases in employment in the three leading industries, together with less marked changes in other industries, resulted in a general decrease in employment in all manufacturing industries combined of 10.8 per cent in 1928 as compared with 1927, and 15.2 per cent as compared with 1926.

Aggregate weekly earnings showed the same general trend as employment in all industries combined, because there was little variation from month to month in the per capita earnings of those actually employed. There was a total variation in the average weekly earnings in 1927 of 93 cents, the lowest average recorded being \$24.02 and the highest, \$24.95, with the average for the year, \$24.52. In 1928 the lowest average was \$24.13, and the highest, \$25.13. The general average for the year 1928 was \$24.54, or two cents more than the average for 1927. Most of the major industries showed correspondingly little fluctuation in the average weekly earnings, and the changes which did occur from month to month were due to the seasonal nature of the particular industries and changes in operating time.

*Employment and Earnings of Building Tradesmen.* The collection of pay-roll data from building contractors was first undertaken in April, 1927, and is now one of the regular monthly surveys made by the division. The questionnaire used is simple in form and calls for the reporting of the number of building tradesmen employed (including laborers); the total amount of wages paid; the total number of man-hours worked; and a statement relative to any general wage adjustments during the period specified.

An endeavor has been made each month to increase the scope of the survey. In December, 1928, reports were received from 363 contractors and sub-contractors. While the returns do not, as yet, cover more than ten per cent of the total number of building tradesmen in the state, the sample may be considered as fairly representative of the building industry as a whole. The results are summarized and made public each month in the form of mimeographed press notices. A brief summary of the results of the survey during the period April, 1927, to December, 1928, inclusive, expressed in the form of index numbers, is presented in Table 2. Because of some variation in the list of contractors reporting from month to month, the index numbers have been computed by the "chain relative" method. Data for a complete year prior to 1928 are not available, and for this reason the averages for the year, 1928, have been taken as a base (100) in computing the index numbers for each month during the entire period covered by this survey.

A comparison of the index numbers for the last nine months in 1928 with the corresponding index numbers for the last nine months in 1927, shows that there was a quite marked decrease during the later period in

Table 2.—*Index Numbers of Employment and Earnings of Building Tradesmen in Massachusetts, as Reported by Building Contractors*

(Average for Year 1928 = 100.0)

MONTHS	Number of Trades- men	Number of Man- hours	Amount Paid in wages	Average Weekly Hours per Man	Average Weekly Earnings per Man	Average Hourly Earnings per Man
1927						
April*	107.4	121.2	113.9	112.8	106.0	93.9
May	105.4	113.2	109.6	107.4	104.0	96.8
June	117.6	123.9	120.1	105.4	102.2	96.9
July	120.7	125.0	122.1	103.6	101.2	97.6
August	123.3	126.1	124.0	102.3	100.6	98.3
September	124.9	129.8	130.4	103.9	104.4	100.4
October	122.6	120.6	121.3	98.4	99.0	100.6
November	124.1	125.8	123.9	101.4	99.8	98.5
December	114.9	110.6	110.0	96.3	95.8	99.4
1928						
January	95.0	97.8	97.1	103.0	102.2	99.3
February	86.6	84.9	86.9	98.0	100.4	102.4
March	81.9	79.8	79.0	97.5	96.5	98.9
April	92.4	90.5	88.4	98.0	95.7	97.6
May	102.5	104.1	102.9	101.6	100.4	98.8
June	102.1	104.3	101.3	102.2	99.2	97.1
July	107.7	108.9	107.3	101.2	99.7	98.6
August	109.7	114.3	113.4	104.2	103.4	99.2
September	107.4	111.1	113.6	103.4	105.8	102.3
October	110.6	107.5	110.2	97.2	99.7	102.5
November	106.0	102.1	102.6	96.3	96.8	100.5
December	98.3	94.6	97.3	96.2	99.0	102.9

\* This survey was first undertaken in April, 1927.

the number of building tradesmen employed, in the number of man-hours worked, and in the aggregate amount of wages paid to those employed, and this was also true of each month in 1928 as compared with the corresponding month in 1927. The average weekly earnings, and the average hourly earnings showed no very marked variation from month to month during the entire period covered by the monthly survey.

The significant fact to which attention should be called is the effect of curtailment in the building industry during the winter months. The active building season in Massachusetts usually covers a period of eight months, beginning in March and continuing through November. Comparatively little new exterior work is undertaken during the winter months, and the work then done is largely confined to interior work on buildings, the superstructure for which has already been erected, and to alteration and repair work.

*Unemployment of Organized Building Tradesmen.* In April, 1927, the collection of statistics of unemployment and membership of organized building tradesmen in Massachusetts was resumed. The plan followed is similar to that in effect throughout a period of sixteen years, 1908-1923, when all trades unions, except musicians, were canvassed quarterly. The present survey is confined to building tradesmen, and data are collected as of the first full working day in each month. The results of this monthly survey are made public in mimeographed press notices. Data for certain prior reporting dates are also presented for purposes of comparison. The reporting organizations and others requesting the information are furnished with copies of the press notices as issued.

The principal data for each of the months in 1928 are presented in Table 3.

The smallest number of unions reporting in any one month was 280, and the largest, 315. The smallest number of members covered was 49,028, and the largest number was 52,226, which was very nearly 100 per cent of the total number of organized building tradesmen in Massachusetts.

There is more unemployment in the colder months because of the difficulties encountered in construction work at such times. The largest percentage reported unemployed for all causes in 1928 was 34.1 on March 1,

Table 3.—*Number and Membership of Unions Reporting, and Number and Percentage of Membership Reported as Unemployed on the First Full Working Day in Each Month in 1928: By Causes of Unemployment*

Classification	Jan.	Feb.	Mar.	Apr.	May	June
Number of unions reporting	304	285	289	280	309	315
Membership of unions reporting	52,226	50,355	49,553	49,028	50,558	50,909
Number of members reported unemployed:						
All causes	14,278	14,807	16,902	14,165	12,172	11,638
Lack of work or materials	10,870	13,807	14,327	13,183	11,207	8,592
Strike or lockout	420	32	75	129	114	2,032
Sickness, accident, or old age	1,098	843	827	821	730	839
Unfavorable weather	1,790	124	1,673	32	47	135
Other reasons	100	1	—	—	74	40
Percentages unemployed:						
All causes	27.3	29.4	34.1	28.9	24.1	22.9
Lack of work or materials	20.8	27.4	28.9	26.9	22.2	16.9
Strike or lockout	0.8	0.1	0.2	0.2	0.2	4.0
Sickness, accident, or old age	2.1	1.7	1.7	1.7	1.4	1.6
Unfavorable weather	3.4	0.2	3.4	0.1	0.1	0.3
Other reasons	0.2	*	—	—	0.2	0.1
Classification	July	Aug.	Sept.	Oct.	Nov.	Dec.
Number of unions reporting	307	313	308	294	308	315
Membership of unions reporting	50,988	51,954	50,755	50,308	51,110	51,789
Number of members reported unemployed:						
All causes	7,424	6,866	8,011	8,645	10,267	12,284
Lack of work or materials	6,539	5,879	7,134	7,691	9,105	11,184
Strike or lockout	37	95	68	24	32	27
Sickness, accident, or old age	731	780	799	894	966	981
Unfavorable weather	117	62	10	36	33	92
Other reasons	—	50	—	—	131	—
Percentages unemployed:						
All causes	14.6	13.2	15.8	17.2	20.1	23.7
Lack of work or materials	12.8	11.3	14.1	15.3	17.8	21.6
Strike or lockout	0.1	0.2	0.1	*	0.1	*
Sickness, accident, or old age	1.4	1.5	1.6	1.8	1.9	1.9
Unfavorable weather	0.2	0.1	*	0.1	0.1	0.2
Other reasons	—	0.1	—	—	0.2	—

\*Less than one-tenth of one per cent.

and the smallest, 13.2 on August 1, and the average for the 12 months in 1928 was 22.6. The principal cause of unemployment throughout the year was *lack of work or materials*, and the average of the percentages unemployed for this cause during the year was 19.7 per cent. *Sickness, accident, or old age* was the next important contributing cause, and the average for the year was 1.7 per cent. The percentage reported as unemployed on account of *strikes and lockouts* on each reporting date was relatively small, except on June 1, when it was 4.0 per cent, and the average of the percentages for the twelve reporting dates was only 0.2 per cent. The percentage reported as unemployed on account of unfavorable weather, except during the winter months, was practically negligible. Apparently many of those reported as unemployed because of unfavorable weather were included among those reported as unemployed on account of lack of work, at least during the winter months.

In Table 4 there is presented a summary of the returns by occupations for each of the reporting dates in 1928.

Table 4.—*Percentage of Organized Building Tradesmen Unemployed, All Causes, on the First Full Working Day in Each Month in 1928: By Principal Occupations*

Occupations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
All Occupations	27.3	29.4	34.1	28.9	24.1	22.9	14.6	13.2	15.8	17.2	20.1	23.7
Bricklayers, masons, and plasterers	23.1	31.8	35.0	29.4	17.9	17.1	9.2	11.0	11.9	14.1	16.8	23.0
Carpenters	25.8	27.4	31.6	24.4	20.8	20.0	17.1	16.8	16.8	16.8	17.6	22.8
Electrical workers	15.7	20.3	22.5	24.5	17.9	12.7	7.0	5.0	9.8	6.1	8.9	10.2
Hod carriers, and building laborers	37.6	33.5	38.1	34.9	38.5	35.1	8.3	10.9	20.7	30.2	37.7	32.6
Lathers	24.4	27.6	26.6	24.7	17.7	14.3	11.9	13.1	15.8	18.4	18.8	18.6
Painters, decorators, and paperhangers	42.4	46.9	48.6	36.4	23.0	17.7	21.4	14.1	18.0	17.4	20.9	27.6
Plumbers, gasfitters, and steamfitters	17.1	21.6	30.7	37.5	30.6	29.0	23.8	16.3	13.1	8.1	8.3	11.2
Sheet metal workers	15.9	12.3	12.7	16.5	15.3	10.2	8.7	5.5	10.1	7.8	7.3	10.7
Other occupations	17.1	28.0	28.1	20.4	17.3	30.9	8.6	3.3	7.2	10.0	16.0	28.3



According to the reports for the year, 1928, the percentages unemployed of the total number of building tradesmen covered were decidedly higher during the winter months than during any other months of the year. There was, however, much variation in the percentages unemployed in the several occupational groups specified in the foregoing table. Sheet metal workers and electrical workers suffered less from unemployment than did other building tradesmen. The average of the percentages unemployed on the twelve reporting dates for all building tradesmen was 22.6 per cent, and for the several groups of occupations the averages were: Sheet metal workers, 11.1; electrical workers, 13.4; lathers, 19.3; bricklayers, masons and plasterers, 20.0; plumbers, gasfitters and steamfitters, 20.6; carpenters, 21.5; painters, decorators and paperhangers, 27.9; and hod carriers and building laborers, 29.8.

The trends of the curves representing unemployment in the several occupations throughout the year were somewhat similar, but show that in the resumption of activity in the spring of the year, some trades lagged behind others. The active period for hod carriers and building laborers was relatively short, and was largely confined to the summer months. The active season for plumbers, gasfitters and steamfitters, and electrical workers continued until the close of the year, but in all other occupational groups specified, the cessation of activities became pronounced as early as November.

The returns were also tabulated in order to show the trend of unemployment of building tradesmen in each of 13 cities in Massachusetts in which such tradesmen are well organized. The jurisdiction of many unions extends beyond the confines of the cities in which they have their headquarters, and the designation "city" refers, therefore, to a district including the city specified and its immediate vicinity. A brief summary of these data for the year 1928 is presented in Table 5.

*Table 5.—Percentage of Organized Building Tradesmen Unemployed, All Causes, on the First Full Working Day in Each Month in 1928: By Specified Cities*

Cities	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<i>The State</i>	27.3	29.4	34.1	28.9	24.1	22.9	14.6	13.2	15.8	17.2	20.1	23.7
Boston	24.9	22.5	27.2	26.6	23.6	23.2	10.5	8.6	14.9	18.4	23.0	24.3
Brockton	20.7	21.7	37.3	17.5	11.5	7.3	4.9	8.0	10.3	9.0	7.1	17.3
Fall River	20.6	26.4	37.4	30.2	38.3	39.6	25.7	25.7	22.8	28.3	23.3	23.0
Holyoke	60.3	77.5	65.5	65.9	41.9	40.7	52.9	55.0	51.7	49.4	34.7	43.4
Lawrence	48.7	37.3	58.9	38.6	32.5	34.4	17.1	18.9	12.7	10.8	18.5	41.7
Lowell	43.4	42.7	44.1	30.8	34.1	35.2	26.7	24.2	20.1	19.7	21.9	33.9
Lynn	18.0	19.8	19.5	17.6	11.8	10.8	6.3	5.6	6.7	6.2	7.9	18.4
New Bedford	39.5	48.9	51.2	41.3	32.8	23.2	36.3	40.3	33.5	33.8	28.7	32.3
Newton	7.1	9.5	17.9	9.4	8.1	10.3	4.3	6.9	4.1	6.6	7.1	8.2
Quincy	21.1	31.7	28.5	18.0	16.1	12.8	9.3	7.5	13.0	17.5	15.0	17.6
Salem	16.9	31.4	36.3	34.3	28.2	21.7	15.9	23.0	28.2	19.5	19.1	22.9
Springfield	30.8	37.6	47.1	42.9	22.5	21.0	18.3	14.2	14.3	9.2	14.6	19.3
Worcester	47.1	55.3	64.3	41.5	38.4	42.9	34.7	29.1	26.6	19.1	31.2	36.4
Other cities and towns	25.5	35.6	37.9	26.4	22.1	17.8	13.8	14.4	12.9	13.7	14.2	19.6

Throughout the year, 1928, there was a marked variation in the percentages reported as unemployed in the 13 cities for which data were separately tabulated. In Boston, Brockton, Lynn, Newton, and Quincy the averages of the percentages reported as unemployed on the twelve reporting dates were below the average (22.6 per cent) for the state as a whole. The averages of the monthly percentages for the several cities were: Newton, 8.3; Lynn, 12.4; Brockton, 14.4; Quincy, 17.3; Boston, 20.6; Springfield, 24.3; Salem, 25.2; Fall River, 28.4; Lawrence, 30.8; Lowell, 31.4; New Bedford, 36.8; Worcester, 38.9; and Holyoke, 53.2.

In nine of the 13 cities the maximum percentage unemployed on any reporting date was in March, and in three cities it was in February. In Fall River the peak occurred in June, but the percentages were almost as high in March and May.

*Building Statistics.* For several years the building department officials

in each of the 39 cities in Massachusetts have furnished to this department at the close of each month, on a prescribed form, detailed returns relative to building permits applied for in their respective cities. In addition to these cities, there are in Massachusetts a number of towns having a population of over 10,000, and in which much building is done. Accordingly, this office communicated with officials in each of 35 of the larger towns, and it was found that in 20 of these towns the building regulations provided that permits must be secured before construction work can be undertaken. In 16 of these towns, the value represented by the permits authorized in 1927 warranted their inclusion in the monthly survey.

The questionnaire used calls for the number of applications filed for permits to build; the values represented thereby, classified by types of structures and their intended use; and the number of family accommodations to be provided by each class of residential building proposed. Mimeographed summaries of the complete returns are issued during the month immediately following that for which the statistics are furnished.

A list of the 55 cities and towns covered by this monthly survey follows:

### 39 Cities

Attleboro	Fall River	Lowell	Newton	Somerville
Beverly	Fitchburg	Lynn	North Adams	Springfield
Boston	Gardner	Malden	Northampton	Taunton
Brockton	Gloucester	Marlborough	Peabody	Waltham
Cambridge	Haverhill	Medford	Pittsfield	Westfield
Chelsea	Holyoke	Melrose	Quincy	Woburn
Chicopee	Lawrence	New Bedford	Revere	Worcester
Everett	Leominster	Newburyport	Salem	

### 16 Towns

Arlington	Brookline	Milton	Plymouth	Wellesley
Belmont	Dedham	Needham	Saugus	West Springfield
Braintree	Frammingham	Norwood	Watertown	field
	Winchester		Winthrop	

The principal data for the years 1928 and 1927 for the 39 cities, 16 towns, and 55 municipalities, by groups, are presented in Table 6. Information in detail for the individual cities and towns will appear in a special publication and is therefore not presented in the present report.

*Table 6.—Summary of Prospective Building in 55 Municipalities in Massachusetts, for the Years 1928 and 1927: By City and Town Groups, and by Classes of Projects*

Number and Cost, and Years	New Resi- dential Building	New Non- residential Building	Additions, Alterations and Repairs	Totals— All Classes of Projects
<b>39 Cities</b>				
Number of buildings:				
1928	7,870	10,407	15,738	34,015
1927	8,477	11,522	17,291	37,290
Estimated Cost:				
1928	\$73,987,225	\$47,414,181	\$19,610,302	\$141,011,708
1927	77,652,301	46,307,564	24,948,952	148,908,817
<b>16 Towns</b>				
Number of buildings:				
1928	2,710	2,560	1,446	6,716
1927	2,941	2,709	1,375	7,025
Estimated Cost:				
1928	\$22,891,384	\$4,633,382	\$2,512,070	\$30,036,836
1927	24,306,925	5,458,031	2,625,663	32,390,619
<b>55 Municipalities (39 Cities and 16 Towns)</b>				
Number of buildings:				
1928	10,580	12,967	17,184	40,731
1927	11,418	14,231	18,666	44,315
Estimated Cost:				
1928	\$96,378,609	\$52,047,563	\$22,122,372	\$171,048,544
1927	101,959,226	51,765,595	27,574,615	181,299,436

In the 39 cities in 1928, applications were filed for permits to erect, add to, alter or repair 34,015 buildings, and the estimated cost of the work to be undertaken was \$141,011,708. The corresponding data for the 16 towns were 6,716 buildings and an estimated cost of \$30,036,836; and for the 55 municipalities combined, 40,731 buildings, and an estimated cost of \$171,048,544. In each instance the number of buildings and the estimated cost was less in 1928 than in 1927. Although the number of buildings covered by all returns from the 55 municipalities was 8.1 per cent less in 1928 than in 1927, the total value represented by all classes of projects was only 5.7 per cent less.

The permits issued in the 55 cities in 1928 represented a proposed expenditure of \$171,048,544, classified as follows: New residential building, \$96,878,609, or 56.6 per cent; new non-residential building, \$52,047,563, or 30.4 per cent; and additions, alterations or repairs, \$22,122,372, or 12.9 per cent. Of the total value represented by permits granted in the 39 cities, the value of new residential building constituted 52.5 per cent, new non-residential building, 33.6 per cent, and additions, alterations and repairs, 13.9 per cent, whereas in the 16 towns the respective percentages were 76.2, 15.4, and 8.4. It therefore appears that residential building constituted a much larger percentage of the total amount of building in the towns than in the cities.

Summary data for 1928 are presented in Table 7 by classes of structures, so as to show the particular type of dwellings and non-residential buildings planned.

*Table 7.—Summary of Prospective Building in 55 Municipalities in Massachusetts During the Year 1928: By Classes of Structures*

1—New Residential Buildings.			
CLASSES OF STRUCTURES	Number of Buildings	Estimated Cost	Number of Family Accommodations
<b>Housekeeping dwellings:</b>			
One-family dwellings . . . . .	7,060	\$45,906,109	7,060
Two-family dwellings . . . . .	2,639	22,730,000	5,278
One-family and two-family dwellings with stores or shops therewith . . . . .	24	284,300	34
Multi-family dwellings (three or more families) . . . . .	832	26,062,200	7,332
Multi-family dwellings with stores or shops therewith . . . . .	14	543,500	105
<b>Non-housekeeping dwellings:</b>			
Hotels . . . . .	2	800,000	—
Lodging houses . . . . .	1	35,000	—
Other non-housekeeping dwellings . . . . .	8	517,500	—
<b>Totals—New residential buildings . . . . .</b>	<b>10,580</b>	<b>\$96,878,609</b>	<b>19,809</b>
2—New Non-residential Buildings; and Additions, Alterations, and Repairs.			
CLASSES OF STRUCTURES	Number of Buildings	Estimated Cost	Rank on basis of Cost
<b>New non-residential buildings:</b>			
Amusement and recreation places . . . . .	69	\$2,726,550	7
Churches, chapels, and parish houses . . . . .	30	1,934,400	8
Factories, bakeries, ice-plants, greenhouses, laundries, and other workshops . . . . .	258	3,804,124	6
Garages, public . . . . .	253	1,672,205	9
Garages, private . . . . .	10,080	4,948,915	3
Gasoline and service stations . . . . .	203	588,848	12
Institutional buildings . . . . .	28	4,548,164	4
Office buildings, including banks . . . . .	92	10,899,515	2
Public buildings, including libraries and museums . . . . .	21	1,207,600	11
Public works and utilities . . . . .	29	1,437,445	10
Schools, grade and high (public and private) . . . . .	26	4,416,084	5
Sheds, poultry houses, and other minor outbuildings . . . . .	1,125	514,735	13
Stables and barns . . . . .	64	119,640	14
Stores, restaurants, and other mercantile buildings . . . . .	600	12,999,385	1
All other non-residential buildings . . . . .	89	229,953	—
<b>Totals—New non-residential buildings . . . . .</b>	<b>12,967</b>	<b>\$52,047,563</b>	<b>—</b>
<b>Additions, alterations, and repairs . . . . .</b>	<b>17,184</b>	<b>\$22,122,372</b>	<b>—</b>

In the 55 municipalities canvassed, 7,060, or 66.7 per cent, of the 10,580 dwellings planned were of the one-family type, and the next largest group comprised 2,639 two-family dwellings, or 24.9 per cent of the total num-



ber. The 832 multi-family dwellings represented only 7.9 per cent; 38 dwellings and stores combined, four-tenths of one per cent; and 11 non-housekeeping dwellings (hotels, lodging houses, dormitories, etc.) one-tenth of one per cent. Of the total estimated cost of new residential buildings (\$96,878,609), \$45,906,109, or 47.4 per cent, represented one-family houses; \$22,730,000, or 23.4 per cent, represented two-family houses; \$26,062,200, or 26.9 per cent, multi-family houses; \$827,800, or nine-tenths of one per cent, dwellings and stores combined; and \$1,352,500, or 1.4 per cent, non-housekeeping dwellings.

With regard to family accommodations provided, the multi-family houses led slightly with 7,332, or 37.0 per cent of the total (19,809), followed by one-family houses with 7,060 accommodations (35.7 per cent), two-family houses with 5,278 accommodations (26.6 per cent), and dwellings and stores combined, 139 accommodations (seven-tenths of one per cent).

The total number of *new non-residential buildings* planned in the 55 municipalities in 1928 was 12,967, estimated to cost \$52,047,563. Of this total value, 80.0 per cent comprised six classes of which 600 stores, restaurants, and other mercantile buildings represented the largest class, with an estimated cost of \$12,999,385 (25.0 per cent of the total value); and the second largest class was 92 office and bank buildings, with an estimated cost of \$10,899,515 (20.9 per cent). The third largest group represented by far the greatest number of buildings, there being 10,080 private garages planned, to cost \$4,948,915 (9.5 per cent).

### *Information Service*

As in former years, numerous inquiries relative to labor and industrial matters were received at this office during the past year. In most instances the information desired was available in the printed reports and mimeographed press notices issued by the division. In some cases special tabulations were made in order to answer inquiries calling for information in greater detail, and, in those cases where the amount of work involved was large, the salaries of special clerks employed thereon were paid by the organization or person desiring the information.

The subjects in which inquirers manifested special interest during the past year were: movement and mortality of manufacturing establishments; industrial trends in principal municipalities; new industries established; employment and unemployment; employment of men over 40 years of age; married women in industry; radium poisoning; silicosis; and state publicity.

A reference library, maintained primarily for the use of the officials of the department, is open to the public and is used extensively by persons desiring to secure information. Two employees of the division devote full time to this branch of the work of the division.

Reports are regularly exchanged with labor departments in other states, with the various departments of the United States Government, with certain foreign countries, and with a number of industrial research organizations; and the more important industrial and trade journals and labor union publications are obtained for reference purposes. The department receives currently 14 daily newspapers, 39 weekly, 13 bi-weekly, 174 monthly, and 18 quarterly publications which are examined, and all articles relating either to the work of the department or to subjects that are of value are clipped and referred to the officials of the department and are later filed for future reference.

## 2. STATISTICS OF MANUFACTURES

The census of manufactures in Massachusetts for the year, 1927, was taken during the past year in co-operation with the United States bureau of the census, thereby avoiding duplication of a considerable amount of field and office work. A saving to this department of about \$4,500 on account of salaries and traveling expenses of temporary investigators in

the field, and postage, and printing was effected through this plan of coöperation.

The field work in Massachusetts was under the immediate supervision of the director of statistics who was appointed as expert special agent by the federal bureau. The schedules furnished by the census bureau were used jointly and the franking privilege was granted in connection with this work. The original schedules returned by the manufacturers were forwarded to the federal bureau, after copies were made for the use of this department.

The tabulation of the returns by industries for the state as a whole are being made at Washington, and the results are not yet available for publication. In order to make public as soon as possible the data for municipalities and the principal industries therein, special tabulations have been made by the division of statistics and the preliminary tabulations have already been issued in the form of press notices, as follows:

*Nos. 1-39. Individual Cities.* A separate press notice for each of the 39 cities containing data, by principal industries, for 1927 with comparable data for specified industries for certain prior years.

*No. 40. Summary by Cities.* Totals only for each city, 1927.

*No. 41. General Summary for the State.* Principal data by years, 1913-1927.

*Table 8.—Principal Data Relative to Manufacturing in Massachusetts, All Industries Combined, 1913-1927, inclusive*

Years	Number of Establishments	Capital Invested	Value of Products	Value of Stock and Materials Used	Value added by Manufacture
		<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
1913 . . . . .	8,405	1,345,461,875	1,658,728,363	961,778,476	696,949,887
1914 . . . . .	12,013 <sup>1</sup>	1,548,960,733	1,641,373,047	931,383,793	709,989,254
1915 . . . . .	9,707	1,550,080,995	1,692,445,366	959,662,457	732,782,909
1916 . . . . .	9,829	1,791,050,092	2,349,933,003	1,354,433,202	995,499,801
1917 . . . . .	9,865	2,239,848,630	3,020,557,545	1,782,440,354	1,238,117,191
1918 . . . . .	9,695	2,510,730,295	3,851,346,215	2,249,822,722	1,601,523,493
1919 . . . . .	11,906 <sup>1</sup>	2,962,108,527	4,011,181,532	2,260,713,036	1,750,468,496
1920 . . . . .	10,262	2,987,620,867	4,370,276,822	2,489,237,446	1,881,039,376
1921 . . . . .	9,994 <sup>1</sup>	<sup>2</sup>	2,849,413,516	1,441,035,230	1,408,378,286
1922 . . . . .	10,056	2,822,014,756	3,002,625,958	1,512,510,105	1,490,115,853
1923 . . . . .	10,519 <sup>1</sup>	<sup>2</sup>	3,570,543,265	1,835,218,349	1,735,324,916
1924 . . . . .	10,174	2,853,590,206	3,126,137,145	1,629,342,134	1,496,795,011
1925 . . . . .	10,027 <sup>1</sup>	<sup>2</sup>	3,426,617,326	1,794,643,051	1,631,974,275
1926 . . . . .	9,903	2,819,189,700	3,419,814,877	1,790,611,294	1,629,203,583
1927 <sup>3</sup> . . . . .	10,091 <sup>1</sup>	<sup>2</sup>	3,306,339,607	1,678,381,053	1,627,958,554

  

Wage-Earners Employed						
Years	AVERAGE NUMBER			Smallest Number	Greatest Number	Amount of Wages paid during the Year
	Males	Females	Both Sexes			
1913 . . . . .	422,559	194,368	616,927	517,185	705,087	\$351,299,706
1914 . . . . .	<sup>2</sup>	<sup>2</sup>	606,698	<sup>2</sup>	<sup>2</sup>	341,309,517
1915 . . . . .	413,017	183,331	596,348	489,173	707,324	346,243,472
1916 . . . . .	475,901	206,720	682,621	577,408	784,359	447,957,731
1917 . . . . .	495,831	212,590	708,421	601,534	827,635	537,144,629
1918 . . . . .	489,237	229,973	719,210	596,454	829,367	679,401,273
1919 . . . . .	490,006	223,830	713,836	<sup>2</sup>	<sup>2</sup>	766,623,337
1920 . . . . .	482,004	213,828	695,832	500,300	847,411	891,176,822
1921 . . . . .	<sup>2</sup>	<sup>2</sup>	579,071	<sup>2</sup>	<sup>2</sup>	641,360,936
1922 . . . . .	416,715	195,967	612,682	488,955	734,675	678,073,968
1923 . . . . .	<sup>2</sup>	<sup>2</sup>	667,443	<sup>2</sup>	<sup>2</sup>	799,363,111
1924 . . . . .	410,322	179,042	589,364	474,738	709,751	711,812,104
1925 . . . . .	<sup>2</sup>	<sup>2</sup>	591,438	<sup>2</sup>	<sup>2</sup>	716,155,593
1926 . . . . .	414,107	188,236	602,343	495,543	708,301	738,208,510
1927 . . . . .	<sup>2</sup>	<sup>2</sup>	577,513	<sup>2</sup>	<sup>2</sup>	705,054,827

<sup>1</sup> The census of manufactures for the years 1914, 1919, 1921, 1923, 1925, and 1927 included certain establishments not canvassed in the other years specified, but these establishments added relatively little to the other items specified.

<sup>2</sup> Not called for on the questionnaire.

<sup>3</sup> The data for 1927 are preliminary and subject to corrections.

No. 42. *Summary by Towns.* Totals for each town, 1927.

No. 43. *Metropolitan Boston.* Principal data by municipalities, 1927.

No. 44. *Summary by Industries.* Totals for 1927, by industries for the state, with comparable data for specified industries for the years 1919-1926.

The total number of manufacturing establishments in Massachusetts in operation in 1927 was 10,091. The total value of products manufactured in these establishments during the year amount to \$3,306,339,607, the value of stock and materials used in manufacture was \$1,678,381,053, and the difference between these amounts (\$1,627,958,554) represents the value added by the various manufacturing processes. The average number of wage-earners employed in the 10,091 establishments during the year was 577,513, and the total amount paid in wages was \$705,054,827.

Preliminary totals for all manufacturing industries combined for the year, 1927, together with comparable totals for the years, 1913-1926, are presented in Table 8. In making comparisons for the several years of

Table 9.—*Principal Data Relative to Manufactures in the 39 Cities, 1927*  
(Preliminary tabulation, subject to corrections)

CITIES	Number of Estab- ments	Value of Stock and Materials Used	Amount of Wages Paid during the Year	Average Number of Wage-earners Employed	Value of Products
<b>The State</b>	<b>10,091</b>	<b>\$1,678,381,053</b>	<b>\$705,054,827</b>	<b>577,513</b>	<b>\$3,306,339,607</b>
<i>39 Cities</i>	<i>8,101</i>	<i>1,296,073,452</i>	<i>655,709,933</i>	<i>436,620</i>	<i>2,548,818,834</i>
Attleboro	139	14,268,699	6,916,847	5,541	28,799,791
Beverly	46	3,792,298	5,141,784	3,810	12,924,157
Boston	2,696	310,863,538	104,526,856	76,876	611,513,669
Brookton	251	35,531,143	14,748,417	12,121	66,308,686
Cambridge	371	65,414,651	26,624,353	21,151	156,074,981
Chelsea	132	17,100,515	8,518,813	6,648	33,564,105
Chicopee	50	42,955,862	12,298,889	9,558	72,859,894
Everett	121	41,033,193	9,006,451	6,105	70,206,911
Fall River	251	70,367,624 <sup>1</sup>	29,217,619	31,364	119,977,011 <sup>1</sup>
Fitchburg	103	26,367,963	9,669,223	7,948	46,710,242
Gardner	78	7,428,551	5,082,800	4,353	17,585,307
Gloucester	84	8,812,374	2,499,392	2,255	14,098,440
Haverhill	355	24,838,740	11,870,640	9,804	48,736,697
Holyoke	149	41,194,149	18,302,713	16,186	83,558,047
Lawrence	174	90,710,831 <sup>1</sup>	28,961,874	24,898	146,517,370 <sup>1</sup>
Leominster	81	10,084,828	5,392,198	5,058	21,057,165
Lowell	240	34,043,875	18,926,360	18,818	69,515,081
Lynn	359	42,663,029	28,474,514	20,780	105,991,962
Malden	114	12,539,836	5,226,377	4,687	28,592,713
Marlborough	35	6,022,159	3,000,764	2,888	10,533,698
Medford	61	3,322,389	1,380,704	1,181	6,514,556
Melrose	26	2,301,470	770,465	597	4,659,140
New Bedford	209	65,756,644	36,421,920	35,086	126,339,428
Newburyport	60	6,300,320	3,483,355	3,084	12,931,366
Newton	68	7,078,408	3,000,851	2,348	14,898,858
North Adams	47	14,237,652	5,451,802	4,692	25,969,481
Northampton	51	7,063,094	3,988,587	3,223	16,154,246
Peabody	86	15,915,455	8,263,291	6,389	30,977,436
Pittsfield	63	18,633,388	11,828,819	8,746	50,191,653
Quincy	158	7,950,152	8,245,228	5,461	23,400,798
Revere	19	455,684	306,817	223	1,136,129
Salem	118	14,223,979	6,293,605	4,986	30,165,624
Somerville	145	49,244,239	7,256,936	5,500	63,790,597
Springfield	326	46,478,585	22,575,070	17,109	105,433,435
Taunton	106	14,883,680	6,989,318	6,154	30,643,231
Waltham	97	6,088,547	7,039,353	5,652	19,378,957
Westfield	66	5,378,354	3,802,933	2,971	13,163,610
Woburn	51	8,651,093	3,121,059	2,207	15,779,050
Worcester	515	96,076,461	41,082,936	30,162	191,865,312
<i>316 Towns</i>	<i>1,990</i>	<i>382,307,601</i>	<i>169,344,894</i>	<i>140,893</i>	<i>757,520,773</i>

<sup>1</sup> The total as originally made public in a mimeographed press notice has been revised in accordance with a later ruling by the U. S. census bureau that the cost value of gray cloth transferred from the cotton manufacturing department to the dyeing and finishing department of the same textile mill should be omitted; otherwise there would be a duplication of that item in the total.



money values, due allowance should be made for price fluctuations and the changes in the purchasing power of the dollar from year to year. The *values* of products manufactured do not necessarily represent the relative *volume* of goods produced during the several years.

*Cities.* Principal data having reference to manufacturing in each of the 39 cities of the commonwealth, with totals for the state and for the 316 towns grouped together, are presented in Table 9.

The total number of manufacturing establishments in the 39 cities in Massachusetts, considered as a group, was 8,101, the total value of products manufactured in the 39 cities in 1927 amounted to \$2,548,818,834, the value of stock and materials used in manufacture was \$1,296,073,452, and the difference between these amounts (\$1,252,745,382) represents the *value added* by the various manufacturing processes. The average number of wage-earners employed in the 8,101 establishments in the 39 cities during the year was 436,620, and the total amount paid in wages was \$535,709,933.

The total value of products manufactured in the 39 cities in 1927 (\$2,548,818,834) constituted 77.1 per cent of the aggregate value (\$3,306,339,607) of all products manufactured in the commonwealth in that year, and the average number of wage-earners (436,620) employed in the manufacturing industries in the 39 cities constituted 75.6 per cent of the average number of wage-earners (577,513) employed in all manufacturing establishments in the state. The total population of the 39 cities (as of March 31, 1925) was 2,909,767, constituting 70.2 per cent of the aggregate population (4,144,205) of the state in that year.

As a manufacturing center Boston ranked first among the cities of the commonwealth and the value of the products manufactured in the city in 1927 was \$611,513,669, constituting 18.5 per cent of the aggregate value of all products manufactured in the entire state during the year. In order of importance, based on the value of products manufactured in 1927, the twenty leading cities were: Boston, Worcester, Cambridge, Lawrence, New Bedford, Fall River, Lynn, Springfield, Holyoke, Chicopee, Everett, Lowell, Brockton, Somerville, Pittsfield, Haverhill, Fitchburg, Chelsea, Peabody, and Taunton.

*Towns.* The total number of manufacturing establishments in operation in the 316 towns in Massachusetts in 1927 was 1,990. The total value of products manufactured amounted to \$757,520,773, the value of stock and materials used in manufacture was \$382,307,601, and the difference between these amounts (\$375,213,172) represents the *value added* by the various manufacturing processes. The average number of wage-earners employed in the 1,990 establishments in the 316 towns during the year was 140,893, and the total amount paid in wages was \$169,344,894.

The total value of products manufactured in the 316 towns in 1927 (\$757,520,773) constituted 22.9 per cent of the aggregate value (\$3,306,305,765) of all products manufactured in the commonwealth in that year, and the average number of wage-earners (140,893) employed in the manufacturing industries in the 316 towns constituted 24.4 per cent of the average number of wage-earners (577,463) employed in all manufacturing establishments in the state. The total population of the 316 towns (as of March 31, 1925) was 1,234,438, and these constituted 29.8 per cent of the aggregate population (4,144,205) of the state.

In order of importance, based on the value of products manufactured in 1927, the ten leading manufacturing towns were: Watertown, Norwood, Framingham, Walpole, Plymouth, Amesbury, Southbridge, Clinton, Easthampton, and West Springfield.

Principal data relative to manufacturing in each of the towns of the commonwealth, for which figures may be presented, are given in Table 10.

Table 10.—Principal Data Relative to Manufactures in the 316 Towns—  
1927

(Preliminary tabulation, subject to corrections)

Towns	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid during the Year	Average Number of Wage-earners Employed	Value of Products
316 Towns <sup>1</sup>	1,990	\$382,307,601	\$169,344,894	140,893	\$757,520,773
Abington	16	1,943,326	897,106	792	4,162,930
Acton	6	572,074	265,909	266	1,279,610
Adams	21	5,005,417	3,131,302	3,000	9,946,628
Amesbury	33	11,133,906	5,968,800	4,257	19,772,024
Amherst	12	559,539	302,589	289	1,186,519
Andover	14	7,952,820	2,587,662	2,176	13,664,803
Arlington	24	779,869	424,927	322	2,047,291
Ashburnham	7	381,927	392,290	358	1,019,288
Ashland	6	295,635	176,330	126	865,089
Athol	34	3,999,993	2,180,782	1,968	9,343,580
Ayer	12	209,098	172,644	130	646,991
Barnstable	8	80,570	71,157	83	315,716
Barre	6	1,098,449	718,876	700	2,232,493
Becket	6	231,276	112,433	114	422,846
Belmont	10	104,640	62,036	43	267,201
Billerica	9	6,296,639	2,868,507	2,046	11,209,629
Braintree	20	10,139,428	1,729,253	1,503	13,738,163
Bridgewater	17	4,151,689	1,548,599	1,403	6,598,741
Brookline	25	842,876	463,123	419	1,891,084
Canton	18	3,619,047	1,245,247	1,135	7,565,514
Chester	5	261,972	305,071	180	898,258
Clinton	23	7,726,886	4,581,469	4,118	16,530,655
Concord	11	307,515	227,351	196	747,280
Dalton	8	2,259,260	937,448	849	5,340,701
Danvers	22	3,743,458	1,122,535	937	7,088,236
Dedham	15	1,049,909	516,253	462	2,094,842
Deerfield	8	834,732	238,775	160	1,272,216
Dudley	8	3,761,994	1,582,793	1,430	6,180,681
Easthampton	17	9,750,356	3,291,802	3,413	16,201,057
Easton	5	650,706	367,993	316	1,513,339
Foxborough	10	853,131	777,555	609	3,256,228
Frammingham	41	13,095,258	5,705,442	3,992	24,236,252
Franklin	23	4,462,730	1,441,447	1,109	7,372,554
Grafton	7	2,679,167	1,490,548	1,360	5,315,858
Great Barrington	17	1,885,966	932,477	870	3,704,280
Greenfield	37	2,185,278	2,029,672	1,613	7,660,069
Hanover	5	793,462	583,352	555	1,872,828
Hingham	5	145,632	185,372	122	419,041
Hudson	30	3,537,767	2,890,378	2,490	9,705,889
Huntington	5	540,627	179,307	170	810,784
Kingston	7	1,006,250	340,792	258	1,606,022
Lee	15	1,387,729	770,491	554	2,955,087
Leicester	8	1,840,012	869,849	763	3,342,519
Lynnfield	3	36,769	16,013	15	79,184
Mansfield	18	2,864,818	838,942	667	4,661,986
Marblehead	21	348,866	391,853	408	937,622
Medway	8	783,777	560,456	458	1,618,194
Merrimac	7	636,141	614,949	550	1,805,348
Methuen	19	5,676,897	1,207,027	1,263	8,174,233
Middleborough	26	2,627,932	1,110,676	1,110	5,243,083
Milford	29	3,119,910	1,467,594	1,173	6,497,535
Millbury	24	3,555,027	1,333,434	1,043	6,101,552
Milton	5	62,175	29,891	21	145,061
Montague	20	3,637,583	1,788,105	1,471	7,352,067
Natick	31	2,763,944	965,361	844	4,775,899
Needham	26	1,410,930	706,401	679	3,092,785
North Andover	10	4,265,131	1,815,238	1,470	7,322,416
North Attleborough	69	4,470,219	3,064,723	2,394	11,892,477
North Brookfield	8	1,091,275	477,615	488	2,104,092
Northbridge	8	4,511,160	3,672,705	3,041	10,784,984
Norton	7	363,733	549,796	494	1,488,412
Norwood	24	11,475,359	4,048,168	2,753	25,261,803
Orange	20	1,821,790	1,133,113	1,040	5,940,987
Oxford	11	1,333,182	763,940	730	2,636,304
Palmer	21	4,212,719	2,390,900	2,241	8,094,551
Plainville	6	623,073	719,345	559	2,198,859
Plymouth	24	14,838,935	3,342,424	2,766	22,756,907
Provincetown	5	23,463	8,715	12	52,021
Randolph	9	615,316	279,880	252	1,145,917

<sup>1</sup> For 153 towns data cannot be presented without disclosing the operations of individual establishments and in 66 towns there were no manufacturing establishments coming within the scope of the census canvass; i. e., with product values in excess of \$5,000.

Table 10.—Principal Data Relative to Manufacturers in the 316 Towns—1927—Concluded

(Preliminary tabulations, subject to corrections)

TOWNS	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid during the Year	Average Number of Wage-earners Employed	Value of Products
Reading . . . . .	13	\$2,346,322	\$616,772	419	\$4,292,239
Rockland . . . . .	21	5,058,169	1,764,095	1,539	8,619,954
Rockport . . . . .	5	253,624	324,374	236	891,928
Saugus . . . . .	11	306,675	167,277	88	647,781
South Hadley . . . . .	11	1,708,045	605,703	531	3,175,689
Southbridge . . . . .	34	5,154,762	4,253,131	3,841	17,225,147
Spencer . . . . .	17	3,400,675	1,374,630	1,318	6,149,244
Stoneham . . . . .	22	1,812,562	812,673	768	3,720,439
Stoughton . . . . .	26	4,990,740	1,697,870	1,367	9,016,377
Templeton . . . . .	14	959,726	601,745	552	2,279,315
Townsend . . . . .	6	662,816	244,611	273	1,157,112
Uxbridge . . . . .	9	5,023,679	1,686,010	1,343	7,620,151
Wakefield . . . . .	26	4,467,877	1,583,011	1,541	7,945,275
Walpole . . . . .	16	14,199,327	2,677,884	1,833	23,349,188
Ware . . . . .	17	3,344,266	1,703,381	1,893	6,725,766
Wareham . . . . .	8	313,695	314,498	280	769,423
Warren . . . . .	6	1,859,719	1,082,669	1,141	3,466,640
Watertown . . . . .	38	21,122,068	10,932,166	7,631	51,717,823
Webster . . . . .	20	5,244,923	2,889,909	2,796	10,378,525
Wellesley . . . . .	15	539,742	195,182	117	1,941,627
West Springfield . . . . .	20	8,167,937	3,567,835	2,434	15,964,435
West Stockbridge . . . . .	6	278,381	201,014	142	622,378
Westborough . . . . .	13	832,287	463,156	459	1,078,681
Weymouth . . . . .	27	6,513,568	2,397,192	1,986	12,603,101
Whitman . . . . .	24	4,269,178	1,835,813	1,419	8,393,944
Winchendon . . . . .	18	2,352,412	1,369,180	1,301	5,588,855
Winchester . . . . .	20	4,303,619	1,452,236	1,059	7,994,943
Winthrop . . . . .	8	140,487	55,228	43	334,361
All other towns . . . . .	424	71,352,181	32,490,641	26,945	142,785,337

*Metropolitan Boston.* As defined for purposes of the annual census of manufactures in Massachusetts, Metropolitan Boston comprises 14 cities and 26 towns included within a radius of about 15 miles from the state house in Boston. Within this area were located 4,769 manufacturing establishments in which products valued at \$1,280,419,147 were manufactured in 1927. The average number of wage-earners employed in these establishments during the year was 178,151, and the total amount paid in wages was \$237,638,314. The number of manufacturing establishments in Metropolitan Boston in 1927 constituted 47.3 per cent of the total number (10,091) in the entire state; the value of products manufactured constituted 38.7 per cent of the total value of all products manufactured in the state; and the number of wage-earners was 30.8 per cent of the total number employed in all manufacturing establishments in the state.

Principal data relative to manufacturing in each of the cities and towns in Metropolitan Boston are presented in Table 11.

*Counties.* Principal data having reference to manufactures in each of the 14 counties of the state are presented in Table 12.

Measured by product value Suffolk county led the counties of the state. The value of goods produced therein (\$646,548,264) constituted nearly one-fifth, 19.6 per cent, of the state total in 1927. Middlesex was a close second with product values amounting to \$625,588,067. The other counties in order or rank in 1927 were: Essex, Worcester, Bristol, Hampden, Norfolk, Plymouth, Berkshire, Hampshire, Franklin, Barnstable, Nantucket, and Dukes.

On the basis of average number of wage-earners employed a somewhat different order appears, Middlesex county leading, followed by Essex, Bristol, Worcester, Suffolk, Hampden, Plymouth, Norfolk, Berkshire, Hampshire, Franklin, Barnstable, Nantucket, and Dukes.



Table 11.—Principal Data Relative to Manufactures in Metropolitan Boston, 1927: By Cities and Towns

(Preliminary tabulation, subject to corrections)

MUNICIPALITIES	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid during the Year	Average Number of Wage-earners Employed	Value of Products
<i>Metropolitan Boston</i>	4,769	\$635,405,124	\$237,638,314	178,151	\$1,280,419,147
<i>The 14 Cities</i>	4,418	574,706,744	213,498,777	159,416	1,155,502,426
Boston	2,696	310,863,538	104,526,856	76,876	611,513, 669
Cambridge	371	65,414,651	26,624,353	21,151	156,074,981
Chelsea	132	17,100,515	8,518,813	6,648	33,564,105
Everett	121	41,033,193	9,006,451	6,105	70,206,911
Lynn	359	42,663,029	28,474,514	20,780	105,991,962
Malden	114	12,539,836	5,226,377	4,687	28,592,713
Medford	61	3,322,389	1,380,704	1,181	6,514,556
Melrose	26	2,301,470	770,465	597	4,659,140
Newton	68	7,078,408	3,000,851	2,348	14,898,858
Quincy	158	7,950,152	8,245,228	5,461	23,400,798
Revere	19	455,684	306,817	223	1,136,129
Somerville	145	49,244,239	7,256,936	5,500	63,790,597
Waltham	97	6,088,547	7,039,353	5,652	19,378,957
Woburn	51	8,651,093	3,121,059	2,207	15,779,050
<i>The 26 Towns</i>	351	60,698,380	24,139,537	18,735	124,916,721
Arlington	24	779,869	424,927	322	2,047,291
Belmont	10	104,640	62,036	43	267,201
Braintree	20	10,139,428	1,729,253	1,503	13,738,163
Brookline	25	842,876	463,123	419	1,891,084
Canton	18	3,619,047	1,245,247	1,135	7,565,514
Dedham	15	1,049,909	516,253	462	2,094,842
Hingham	5	145,632	185,372	122	419,041
Milton	5	62,175	29,891	21	145,061
Needham	26	1,410,930	706,401	679	3,092,785
Reading	13	2,346,322	616,772	419	4,292,239
Saugus	11	306,675	167,277	88	647,781
Stoneham	22	1,812,562	812,673	768	3,720,439
Wakefield	26	4,467,877	1,583,011	1,541	7,945,275
Watertown	38	21,122,068	10,932,166	7,631	51,717,823
Wellesley	15	539,742	195,182	117	1,941,627
Weymouth	27	6,513,568	2,397,192	1,986	12,603,101
Winchester	20	4,303,619	1,452,236	1,059	7,994,943
Winthrop	8	140,487	55,228	43	334,361
8 other towns <sup>1</sup>	23	990,954	565,297	377	2,458,150

<sup>1</sup> Includes three towns (Cohasset, Hull, and Nahant) in which there were no manufacturing establishments, and five towns (Dover, Lexington, Swampscott, Weston, and Westwood) for which data cannot be shown separately without disclosing the operations of individual establishments.

Table 12.—Principal Data Relative to Manufactures in the 14 Counties, 1927. (Preliminary tabulation, subject to corrections)

COUNTIES	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid during the Year	Average Number of Wage-earners Employed	Value of Products
<i>The State</i>	10,091	\$1,678,381,053	\$705,054,827	577,513	\$3,306,339,607
Barnstable	30	3,300,567	1,158,586	844	5,360,106
Berkshire	214	47,623,465	24,992,678	20,251	105,760,679
Bristol	846	178,375,011	87,369,286	84,426	336,349,451
Dukes	4	7,888	13,442	9	35,114
Essex	1,468	244,747,782	110,783,041	89,014	469,303,505
Franklin	122	11,527,719	6,763,681	5,605	28,486,173
Hampden	662	158,816,687	67,315,427	54,301	320,865,893
Hampshire	132	23,295,901	10,393,679	9,829	45,118,265
Middlesex	1,705	317,964,241	121,993,174	99,046	625,588,067
Nantucket	4	34,626	28,844	20	106,320
Norfolk	462	78,428,234	30,277,806	22,811	156,288,382
Plymouth	427	72,568,481	27,731,061	23,200	131,066,881
Suffolk	2,855	328,560,224	113,407,714	83,790	646,548,264
Worcester	1,160	213,130,227	102,826,408	84,367	435,462,507

## 3. PUBLIC EMPLOYMENT OFFICES

This report covers the operations, during the calendar year, 1928, of the four public employment offices maintained by the commonwealth. These offices are located, respectively, at 23 Pearl street, Boston (main office); 25 Tremont street, Boston (mercantile office); Worthington street and Columbus avenue, Springfield; and 37-39 Waldo street, Worcester. The statistical data herein presented, and, more particularly, the numbers of persons called for by employers and the numbers of positions reported filled, furnish a record of the services rendered by these offices to employers and applicants for employment. Comparable data for the calendar year, 1927, are presented for purposes of comparison.

*Statistical Summary*

The principal data relative to the work of the offices during the year, 1928, with corresponding data for the year, 1927, are presented in Table 13.

*Table 13.—Summary of Business of the Four State Public Employment Offices, during the Years, 1928 and 1927*

OFFICES	1928			1927		
	Persons Called for by Employers	Persons Referred to Positions	Positions Reported Filled	Persons Called for by Employers	Persons Referred to Positions	Positions Reported Filled
Boston—main office . . .	14,796	19,819	13,052	15,232	19,480	13,721
Boston—mercantile office . . .	2,152	2,779	1,656	1,286	3,101	1,103
Springfield office . . .	9,731	10,553	8,185	9,514	10,190	8,168
Worcester office . . .	6,848	7,288	5,431	7,166	7,846	5,866
<i>Totals—four offices . . .</i>	<i>33,527</i>	<i>40,439</i>	<i>28,324</i>	<i>33,198</i>	<i>40,617</i>	<i>28,858</i>

*Positions Reported Filled.* The total number of positions reported filled during the year, 1928, by the four offices combined, was 28,324 which was less by 534, or 1.9 per cent, than the number (28,858) reported filled during the year, 1927. At the main office in Boston there was a decrease of 4.9 per cent and at the Worcester office a decrease of 7.4 per cent, but the mercantile office in Boston reported an increase of 50.2 per cent, and the Springfield office reported a very slight increase of 0.2 per cent in the number of positions filled in 1928 as compared with the corresponding number filled in 1927. The large increase noted in the case of the mercantile office was the result of special efforts made to bring this office to the attention of employers. From each of the offices registrars have been sent out regularly to call upon employers for the purpose of acquainting them with the work of the offices, and through advertising and circular letters an endeavor has been made to secure an increase in the number of orders from employers.

*Persons Called for by Employers.* During the year 1928 the total number of persons called for by employers at the four offices combined was 33,527, which exceeded by 329, or 1.0 per cent, the number (33,198) called for during the year, 1927. Of the total number of persons called for by employers in 1928, 84.5 per cent were supplied, as compared with 86.9 per cent supplied in 1927.

*Persons Referred to Positions.* The total number of persons referred to positions by the four offices combined during the year 1928, was 40,439. A large number of those referred to positions either failed to secure or declined to accept appointment. The total number of positions reported filled in 1928 was 28,324, and in order to fill these positions, 40,439 persons were referred, or an average of 1.4 persons for each position filled.

*Records by Sex.* In Table 14 principal data for the year, 1928, are presented by sex for each of the four offices, separately, and for the four offices combined.

Table 14.—Summary of Business of the Four State Public Employment Offices during the year, 1928: By Offices and Sex

CLASSIFICATION	Registrations	Persons Called for by Employers	Persons Referred to Positions	Positions Reported Filled
<b>BOSTON—MAIN OFFICE</b>				
Males . . . . .	6,007	11,318	14,800	10,043
Females . . . . .	1,735	3,478	5,019	3,009
<i>Totals</i> . . . . .	<i>7,742</i>	<i>14,796</i>	<i>19,819</i>	<i>13,052</i>
<b>BOSTON—MERCANTILE OFFICE</b>				
Males . . . . .	2,284	551	752	394
Females . . . . .	3,909	1,601	2,027	1,262
<i>Totals</i> . . . . .	<i>6,193</i>	<i>2,152</i>	<i>2,779</i>	<i>1,656</i>
<b>SPRINGFIELD</b>				
Males . . . . .	3,419	6,202	6,806	5,432
Females . . . . .	1,954	3,529	3,747	2,753
<i>Totals</i> . . . . .	<i>5,373</i>	<i>9,731</i>	<i>10,553</i>	<i>8,185</i>
<b>WORCESTER</b>				
Males . . . . .	2,202	3,979	4,477	3,289
Females . . . . .	1,159	2,869	2,811	2,142
<i>Totals</i> . . . . .	<i>3,361</i>	<i>6,848</i>	<i>7,288</i>	<i>5,431</i>
<b>FOUR OFFICES COMBINED</b>				
Males . . . . .	13,912	22,050	26,835	19,158
Females . . . . .	8,757	11,477	13,604	9,166
<i>Totals</i> . . . . .	<i>22,669</i>	<i>33,527</i>	<i>40,439</i>	<i>28,324</i>

Of the 28,324 positions reported filled during the year, 1928, by the four offices combined, 19,158, or 67.6 per cent, were filled by males. At the main office in Boston, which is engaged principally in the placement of manual workers (skilled and unskilled), 76.9 per cent of the positions were filled by males. The mercantile office in Boston, which was established primarily for the purpose of securing positions for stenographers, bookkeepers, clerks, salespeople, and other employees in stores and offices, operates in a field of employment in which females predominate, and the number of positions filled by males constituted only 23.8 per cent of the total number of positions filled by that office. At the Springfield office the number of positions filled by males constituted 66.4 per cent of the total number of positions filled by that office. At the Worcester office, 60.6 per cent of the total number of positions were filled by males. At the Springfield and Worcester offices there was a relatively greater demand for domestic workers than at the main office in Boston.

*Records by Months.* The principal data relative to the activities of the four offices during the year, 1928, are summarized, by months, in Table 15.

Table 15.—Summary of Business of the Four State Public Employment Offices during the Year, 1928: By Months

MONTHS	Office Days	Registrations	Persons Called for by Employers	Persons Referred to Positions	Positions Reported Filled
January . . . . .	25	1,555	1,809	2,222	1,578
February . . . . .	24	1,143	1,852	2,239	1,605
March . . . . .	27	1,650	2,554	3,102	2,105
April . . . . .	24	1,504	2,702	3,232	2,262
May . . . . .	26	2,248	3,532	4,224	2,943
June . . . . .	26 <sup>1</sup>	2,204	3,106	3,620	2,624
July . . . . .	25	2,726	2,895	3,478	2,446
August . . . . .	27	2,342	3,232	3,964	2,586
September . . . . .	24	2,217	3,536	4,266	2,947
October . . . . .	26	2,322	3,726	4,517	3,279
November . . . . .	24	1,518	2,409	2,915	2,064
December . . . . .	25	1,240	2,174	2,660	1,885
<i>Totals</i> . . . . .	<i>303</i>	<i>22,669</i>	<i>33,527</i>	<i>40,439</i>	<i>28,324</i>

<sup>1</sup> Boston office 25 days (closed June 17); Springfield and Worcester offices, 26 days.



*Veterans.* Special attention is given at each of the four state offices to the placement of veterans, and records relative to the service rendered them are kept separately. A summary of these records for the years 1928 and 1927, by offices, appears in Table 16.

*Table 16.—Number of Veterans Registered, Referred to Positions, and Number of Positions Reported Filled by Veterans, 1928 and 1927: By Offices*

OFFICES	1928			1927		
	Regis- trations <sup>1</sup>	Referred to Positions <sup>2</sup>	Positions Reported Filled <sup>2</sup>	Regis- trations <sup>1</sup>	Referred to Positions <sup>2</sup>	Positions Reported Filled <sup>2</sup>
Boston (main office)	1,220	2,934	2,100	1,091	2,846	2,112
Boston (mercantile office)	142	48	31	138	36	21
Springfield	204	791	672	83	500	461
Worcester	59	437	380	89	516	438
<i>Totals</i>	<i>1,625</i>	<i>4,210</i>	<i>3,183</i>	<i>1,401</i>	<i>3,898</i>	<i>3,032</i>

<sup>1</sup> Applicants for positions are registered but once each year, regardless of the number of times they apply for positions during the year.

<sup>2</sup> Includes duplications of individuals who were referred to more than one position or placed in more than one position during the year.

The total number of veterans registered at the four offices during the year 1928 was 1,625, showing an increase of 224, or 16.0 per cent, over the number (1,401) registered in 1927. The total number of positions reported filled by veterans in 1928 was 3,183, and exceeded by 151, or 5.0 per cent, the number (3,032) of positions reported filled by veterans in 1927. In explanation of the fact that the number of positions reported filled by veterans, and the number of veterans referred to positions exceeded the number of veterans registered, it should be stated that many of those registered were referred to more than one position or placed in more than one position during the year specified. Of the 19,158 positions reported filled by males during the year 1928, by the four offices combined, 3,183, or 16.6 per cent, were filled by veterans.

*Classification by Industries and Occupations.* In Table 17 data are presented showing the number of persons called for by employers and the number of positions reported filled in 1928, classified by industries or occupations represented, and by offices.

Casual workers, common laborers, and persons in domestic and personal service, together numbering 20,020, constituted 59.7 per cent of the total number (33,527) of persons called for by employers at the four offices in 1928, and, of the 28,324 positions reported filled, 18,032, or 63.7 per cent, were filled by applicants classified within these groups. The building and construction industries, metal and machine trades, and clerical occupations were also well represented. Special efforts have been made to increase the service rendered to persons seeking employment in stores and offices, and through the mercantile office in Boston, which was established in January, 1922, primarily for the placement of applicants for such employment, 1,656 positions were reported filled during the past year.

*Cost of Operation.* The summary Table 18 shows for the *fiscal* year ending November 30, 1928, the expenditures on account of each of the four offices, the number of placements (positions reported filled), and the per capita cost of placements, with corresponding data for the fiscal year ending November 30, 1927, for purposes of comparison.

Table 17.—Number of Persons Called for by Employers and Number of Positions Reported Filled in 1928: By Industries and Offices

INDUSTRIES AND OCCUPATIONS	Number of Persons Called for by Employers				Number of Positions Reported Filled			
	Boston Main Office	Boston Mer- cantile Office	Spring- field Office	Wor- cester Office	Boston Main Office	Boston Mer- cantile Office	Spring- field Office	Worces- ter Office
Agriculture	58	—	552	189	44	—	430	122
Building and construction	1,899	—	405	324	1,551	—	325	273
Casual workers	1,810	—	4,123	3,464	1,259	—	4,057	3,465
Chemicals, oils, paints, etc.	18	—	—	—	15	—	—	—
Clay, glass and stone products	—	—	—	5	—	—	—	2
Clerical, professional, and technical	17	1,820	98	115	10	1,424	34	37
Clothing and textiles	367	—	30	101	259	—	25	58
Common labor (not casual workers)	4,859	—	1,500	324	4,705	—	1,473	280
Domestic and personal service	1,974	—	1,276	1,190	1,632	—	588	573
Food, beverages, and tobacco	113	—	49	24	125	—	32	16
Leather, rubber and allied products	298	—	90	32	256	—	89	12
Lumber	—	—	41	19	—	—	30	13
Metals and machinery	1,109	—	923	621	780	—	628	306
Paper and printing	556	—	42	25	480	—	16	15
Shipbuilding	338	—	8	46	247	—	—	—
Theatres and amusements	49	—	25	2	47	—	19	—
Transportation and public utilities	133	—	82	80	95	—	65	55
Wholesale and retail trade	103	332	168	96	81	232	122	74
Woodworking and furni- ture	34	—	35	12	14	—	24	7
Miscellaneous	1,561	—	284	179	1,452	—	228	123
<i>Totals</i>	<i>14,796</i>	<i>2,162</i>	<i>9,731</i>	<i>6,848</i>	<i>13,052</i>	<i>1,656</i>	<i>3,158</i>	<i>5,431</i>

The per capita cost of placements is derived by dividing the total expenditures on account of the operation of the offices by the number of placements made during the year. For the four offices, combined, the per capita cost of placements was \$2.32 for the fiscal year, 1928, as compared

Table 18.—Expenditures, Number of Placements, and Per Capita Cost of Placements, Fiscal Years,\* 1928 and 1927: By Offices

OFFICES	EXPENDITURES		NUMBER OF PLACEMENTS		PER CAPITA COST OF PLACEMENTS	
	1928	1927	1928	1927	1928	1927
Boston—main office	\$31,379.73	\$32,009.05	13,006	13,955	\$2.41	\$2.29
Boston—mercantile office	6,188.52	5,698.37	1,625	1,132	3.81	5.03
Springfield office	16,230.90	15,858.82	8,184	8,379	1.98	1.89
Worcester office	11,669.38	11,024.91	5,447	5,968	2.14	1.85
<i>Totals</i>	<i>\$65,468.53</i>	<i>\$64,591.15</i>	<i>28,262</i>	<i>29,434</i>	<i>\$2.32</i>	<i>\$2.19</i>

\* Fiscal years ending November 30.

with \$2.19 for the fiscal year, 1927. The increase of 13 cents per placement resulted from a decrease of 1,172 in the total number of placements accompanied by an increase of \$877.38 in the total expenditures during the fiscal year, 1928. For the several offices the per capita costs of placements during the last fiscal year were: Boston (main office), \$2.41; Boston (mercantile office), \$3.81; Springfield, \$1.98; and Worcester, \$2.14. A marked reduction (from \$5.03 in 1927 to \$3.81) in the per capita cost of placements made by the mercantile office in Boston was due to a large increase (43.7 per cent) in the number of placements made by that office, without a correspondingly large increase in the cost of operation.

*Coöperation with the United States Employment Service*

During the past year the department continued to coöperate with the United States employment service. The commissioner of labor and industries serves as federal director for Massachusetts, and the director of the division of statistics is in immediate charge of this coöperative work. The federal service provides for the payment of salaries of two employees, one of whom serves as examiner-in-charge of the mercantile employment office in Boston, and the other as superintendent of the Westfield office (a federal-municipal office). The total contribution of the federal bureau toward the employment service in Massachusetts during the calendar year on account of salaries was \$4,127.30 and there was also some saving to the department as a result of the use of the franking privilege.

In addition to the four state offices, twelve other offices in Massachusetts are now coöperating with the federal service. These are as follows:

Boston	Municipal Employment Bureau
	Boston Urban League
	Boston Clearing House for Men
Chelsea	Chamber of Commerce
Fitchburg	American Legion, Post No. 10
Framingham	Civic League
Lowell	Civic Employment Bureau (Municipal)
	Chamber of Commerce
New Bedford	Young Women's Christian Association
Waltham	Chamber of Commerce
Watertown	Chamber of Commerce
Westfield	Municipal Employment Bureau

The Chelsea Chamber of Commerce entered into coöperative relations with the federal service during the past year and no offices withdrew.

The coöperating offices are required to furnish monthly reports and to conform to certain regulations with reference to their operation. The federal service supplies certain standard forms for their use, grants the use of the franking privilege in connection with their placement work, and, in some instances has loaned them furniture and office equipment.





















